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THE RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY

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Charles Shaler Smith, M. Am. Soc. C. E., builder of the famous "High Bridge" over the Kentucky River on the old Cincinnati Southern Ry., of the famous "Hanging Bridge" over the Royal Gorge of the Arkansas River on the present Denver & Rio Grande Western Ry., and of the famous Lachine Bridge, over the St. Lawrence River on the Canadian Pacific Ry. was an eminent bridge builder in his day. The records of the American Society of Civil Engineers establish that fact. This Society is honored in having his daughter, Mrs. Mary G. Cumming for one of its members. She has presented a very interesting account of the life of her father which we are sure our members will enjoy. This is the first paper presented by a woman that has been published in our columns. Thus, this Society, like the new Administration in Washington, is recognizing the ability of the fair sex.

The paper presented by Mr. O. H. Means, covering the history of the Minneapolis & St. Louis R. R., represents a great deal of time and research work on the part of the author and those who assisted him. There appears to be a notion in the minds of some of our members and others not connected with the Society, that your Committee in Charge of Publications is not interested in the history of our mid-western roads. The contrary is the truth of the matter. Unfortunately there is an apparent dearth of writers on this subject and until this defect can be remedied this material will be lacking in our columns. Mr. Means deserves much credit for his contribution and let us hope some more of our members will be inclined to help in this matter.

Mr. W. G. Larmour has contributed some interesting recollections of the old Chicago & Grand Trunk Ry. All of the illustrations used are

from his own drawings. They should be of interest to our members. In Bulletin No. 29 we closed the Boston & Maine R. R. locomotives with those that came from the Northern (N. H.) R. R. The series is continued in this bulletin including the locomotives that came to the Boston & Maine from the Boston & Lowell R. R. On account of the mergings and separations of the Boston & Lowell and Nashua & Lowell roads, this series is a bit complicated. It is presented in the simplest fashion possible.

On February 15th of this year we mailed to all of our members the annual leaflet. Copies of our membership roster have been mailed recently. All of our members are entitled to receive these publications. Bulletin No. 30, a special bulletin, covering the life of John Bloomfield Jervis, some notes relative to the ideas of Mathew Carey and an index for the first thirty bulletins issued by this Society, was distributed last February.

Again Mr. Kuhler has contributed a cover design for our bulletin. The subject this time represents the "Col. Hosley" on the Northern (N. H.) R. R., mentioned and illustrated in Bulletin No. 29.

THE PENNOYER COLORED PRINTS

It may be of interest to our newer members to learn that this Society has for sale an interesting set of colored lithographs of locomotives.

The originals are from the brush of that talented artist and member of this Society—A. Sheldon Pennoyer. They were originally reproduced in "Fortune", a magazine known for its reproductions and a limited number of sets were run off for this Society from the same plates. These plates have since been destroyed.

The subjects include "Snowbound", a Crampton type of locomotive on the Camden & Amboy R. R. in 1850; the "Pioneer" on the Cumberland Valley R. R., built by Seth Wilmarth of Boston, in 1851; an American Express train of the 70's hauled by a Rogers locomotive and through the kindness of the Delaware & Hudson R. R. we are able to include the "Stourbridge Lion", imported from England in 1829. The "Pioneer" is 7x11 in size, the other three are 8 $\frac{1}{4}$ x10 $\frac{1}{2}$. There are still a few sets left. The price is \$5.00 per set. Orders should be sent to Chas. E. Fisher, 6 Orkney Road, Brookline, Mass.

The Locomotives of The Boston & Maine Railroad

By CHAS. E. FISHER



N PREVIOUS bulletins we have listed at no little length the locomotives from the original Boston & Maine R. R., the Eastern R. R. and the Northern (New Hampshire) R. R. We now come to that group of locomotives that came from the Boston & Lowell R. R.

The Boston & Lowell R. R. was incorporated in the State of Massachusetts, June 5, 1830, and although it was not the first road opened for the transportation of freight and passengers of the three roads radiating from Boston, as such, it ranks as the oldest railroad in this state. The road was to build between the cities named, a distance of 26.77 miles and was opened for traffic on June 24, 1835.

The Nashua & Lowell R. R., connecting the two cities named, a distance of 14.50 miles, was incorporated Apr. 28, 1835 and the road was opened for traffic Oct. 8, 1838. The story of the Boston & Lowell and the Nashua & Lowell roads is very much like two foolish boys; first they pool their interests, then a quarrel ensues and finally peace is restored. In this instance the Nashua & Lowell R. R. was leased to the Boston & Lowell R. R., November 10, 1880.

For a time the Boston & Lowell R. R. was satisfied by either building or taking over small roads that tapped competitive territory in the Boston & Maine, Eastern and other roads centering in Boston. The value of the northern roads, connecting with the Montreal and Ogdensburg gateways became apparent and the management branched out into broader fields. At one time the Connecticut & Passumpsic River; Boston, Concord & Montreal; Concord; St. Johnsbury & Lake Champlain and the Vermont Valley, these being the larger roads, were controlled by the Boston & Lowell R. R. As mentioned in Bulletin No. 29, the Northern (N H) R. R. was controlled by the Boston & Lowell R. R. The lease of this road to the Boston & Lowell R. R. was bitterly contested by the minority stockholders. The court declared the lease invalid and the Concord R. R. endeavored to secure a lease. The decision of the Supreme Court of the State of New Hampshire, in the case of the lease of the Northern (N H) R. R. and the Boston & Lowell R. R., made a serious situation for the latter road in the matter of the Boston and Montreal through line.

The directors of the Boston & Lowell R. R. proposed to lease their road to the Boston & Maine, feeling that the latter road by means of their already existing leases and contracts would be in a better position to effect a consolidation with the "upper" roads. Accordingly, the lease was ratified by the stockholders of both lines and took effect on June 22, 1887, the date of the lease being April 1st of that year. At the time of the lease, the Boston & Lowell R. R. locomotives were much heavier and more modern than those of the Boston & Maine R. R. The passenger equip-

ment of the Boston & Lowell R. R. was entirely equipped with the Westinghouse airbrake, Hall and Union block signals were used and the road bed was of the best. To those who wish to read a more detailed story of the road, the recent work of the late Francis B. C. Bradlee on "The Boston & Lowell Railroad", published in 1918 by the Essex Institute of Salem, Mass., will give them much more than this brief outline.

Before presenting this list of Boston & Lowell R. R. locomotives, I am using the list as arranged by the late H. P. Yeaton, with such additions that I have found from the Annual Reports, locomotive rosters, etc. I also wish to acknowledge with appreciation, the corrections and additional data furnished by Mr. G. F. Starbuck. Lest there be no misunderstanding, the reader must realize that we are considering this list from the Boston & Maine point of view, consequently, such locomotives from such leased lines as the Boston, Concord & Montreal; St. Johnsbury & Lake Champlain; Connecticut & Passumpsic River Railroads, although those roads were leased to the Boston & Lowell R. R. and their locomotives numbered in the Boston & Lowell series, they will not be included in the following but will be shown in their proper place in the Boston & Maine series.

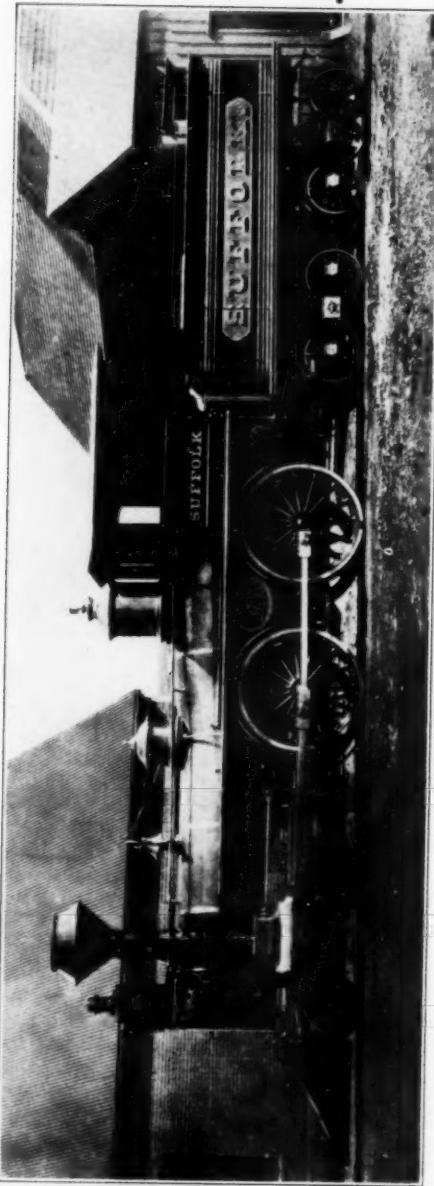
BOSTON & LOWELL R. R.

Engines on the Boston & Lowell R. R. up to the Time of the Consolidation with the Nashua & Lowell Railroad—October 1, 1858.

Stephenson	R. Stephenson		1832	11x16"	0-4-0	Scrap	B & L	1840
Patrick	Locks & Canal Co.	# 1	1835	11x16"	0-4-0	Scrap	B & L	1840
Boston	Locks & Canal Co.	# 3	1835	11x16"	0-4-0	Scrap	B & L	1840
Lowell	Locks & Canal Co.	# 2	1835	11x16"	0-4-0	Scrap	BL & N	1863(?)
Merrimac	Locks & Canal Co.	—	1836	—	—	Scrap	BL & N	1865(?)
Nashua	Locks & Canal Co.	—	1836	11x16"	0-4-0	Scrap	BL & N	1865(?)
Concord	Locks & Canal Co.	—	1836	11x16"	0-4-0	Scrap	BL & N	1872(?)
Suffolk	Locks & Canal Co.	—	1839	11x16"	0-4-0	Scrap	BL & N	1871(?)
Medford	Locks & Canal Co.	—	1840	11x16"	0-4-0	Scrap	BL & N	
Goliath	Locks & Canal Co.	—	1842	12½x16"	—	Scrap	BL & N	1870(?)
Hercules	Locks & Canal Co.	—	1842	12½x16"	0-4-0	Sold—1855		
Samson	Locks & Canal Co.	—	1842	12½x16"	0-4-0	Scrap	BL & N	1873(?)
Milo	Hinkley & Drury	# 33	1845	13½x20"	4-4-0	BL & N #51		
Ajax	Hinkley & Drury	# 36	1845	13½x20"	0-4-0	BL & N #31		
Whistler	Locks & Canal Co.	—	1847	11x14"	4-4-0	Rebuilt at Amoskeag 1853		
Baldwin	Locks & Canal Co.	—	1847	11x14"	4-4-0	Rebuilt—Boston L. W.—1852		
McNeill	Hinkley & Drury	# 137	1847	15x18"	4-4-0	BL & N #27		
Vulcan	Hinkley & Drury	# 144	1848	15x20"	4-4-0	BL & N #4		
Rumford	Hinkley & Drury	—	—	16x18"	4-4-0	BL & N #2		
S. H. Long	Hinkley & Drury	# 163	1848	15x18"	4-4-0	Sold—U. S. Gov't.		
Vesta	Norris	—	1848	13x20"	4-4-0	BL & N #36		
Mars	Hinkley & Drury	# 186	1848	15x20"	4-4-0	BL & N #56		
Pawtucket	Lowell M. S.	—	1848	—	—	BL & N #3		
Hector	Hinkley & Drury	# 197	1848	13½x20"	0-4-0	BL & N #62		
Woburn	Boston & Lowell	—	1850	12x18"	4-4-0	BL & N #10		
Essex	Essex Co.	—	1851	15x20"	4-4-0	BL & N #12		
Storrow	Boston L. W.	# 474	1853	15x24"	4-4-0	BL & N #14		
Higginson	Boston L. W.	# 610	1856	15x22"	4-4-0	BL & N #19		
Leader	?	—	?	?	?	BL & N #15		



Locomotive "Stephenson" and First Train on Boston & Lowell R. R.



Boston, Lowell & Nashua R. R. "Suffolk"—Mason, 1873

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Eagle	Lowell M. S.	\$132	1853	?	4-4-0	BL & N	\$42
Cloud	Lowell M. S.	\$134	1853	14x20"	4-4-0	BL & N	\$44
Boardman	Mason	\$72	1857	15x22"	4-4-0	BL & N	\$22
Transport	Boston L. W.	\$267	1850	16x20"	4-6-0	BL & N	\$9
Sailor Boy	Boston L. W.	\$268	1850	15x20"	4-4-0	BL & N	\$8
Factory Girl	Boston L. W.	\$269	1850	15x20"	4-4-0	Sold by BL & N	

The Hinkley records disclose their engine #205—"Camilla", built in 1848, 4-2-2, 15x20" was built for the Boston & Lowell R. R. Whether this engine was delivered and if so, its disposition, I'm unable to advise. I have questioned the dates that some of these engines were scrapped because these engines do not appear on the inventory made in 1857.

NASHUA & LOWELL R. R.

Engines on the Nashua & Lowell R. R. up to the time of the Consolidation with the Boston & Lowell Railroad—Oct. 1, 1858.

Mars	H. R. Dunham & Co.	—	1838	11x16"	4-2-0	Scrap	N & L	1857
Jehu	H. R. Dunham & Co.	—	1838	11x16"	4-2-0	Sold—Northern R. R.		
Roe buck	Locks & Canal Co.	—	1839	11x18"	4-2-0	Scrap	N & L	1856 Sold to
Lion	Hinkley & Drury	\$ 22	1844	13½x20"	0-4-0	Sold to		
Nashville	Hinkley & Drury	\$ 91	1847	14x18"	4-4-0	Scrap	BL & N	
Indian Head	Hinkley & Drury	\$147	1848	14x18"	4-4-0	BL & N	\$52	
Wilton	Taunton L. W.	\$ 10	1848	14x18"	4-4-0	BL & N	\$17	
Rolla	Hinkley & Drury	\$196	1848	14x18"	4-4-0	Scrap	BL & N	
Paugus	Hinkley & Drury	\$203	1848	16x20"	4-4-0	Scrap	BL & N	
Logan	Hinkley & Drury	\$257	1850	16x24"	4-4-0	BL & N	\$7	
Jesse Bowers	Amoskeag	—	1854	16x20"	4-4-0	BL & N	\$18	
Milford	?	—	1857	?	?			
Pennichuck	Taunton L. W.	\$219	1857	15x20"	4-4-0	BL & N	\$30	
Daniel Abbott	Amoskeag	\$ 44	1852	15x22"	4-4-0	BL & N	\$13	

The number at the extreme right is the number assigned when the two roads were consolidated into the Boston, Lowell & Nashua R. R.

On February 1, 1857, the rolling stock of both roads was appraised and the following engines are listed:

Boston & Lowell R. R.

Leader	\$7800.00
Storror	\$7800.00
Higginson	\$7500.00
Cloud	\$7000.00
Eagle	\$7000.00
Essex	\$7000.00
Mars	\$6500.00
Pawtucket	\$6000.00
Woburn	\$5800.00
Vulcan	\$5250.00
Milo	\$4500.00
Rumford	\$4200.00
Ajax	\$4000.00
McNeill	\$4000.00
Vesta	\$4250.00
Hector	\$3500.00

Nashua & Lowell R. R.

Pennichuck	\$8500.00
Jesse Bowers	\$7500.00
Milford	\$6500.00
Logan	\$6000.00
Daniel Abbott	\$6000.00
Rolla	\$4500.00
Wilton	\$4000.00
Paugus	\$5500.00
Nashville	\$3000.00
Indian Head	\$2500.00

If any of the older Boston & Lowell R. R. locomotives survived to this time, they do not appear in this valuation.

From Oct. 1, 1858 to Dec. 1, 1877, these Two Roads Were Operated as the Boston, Lowell & Nashua R. R. After the later date they were operated again as separate companies, the Nashua & Lowell R. R. receiving 31% of the Equipment, the Boston & Lowell R. R. the balance.

1 Archer	Hinkley	\$ 1247	1877	17x24"	4-4-0	B & L	\$ 1
2 Rumford	Hinkley & Drury	—	1848	16x18"	4-4-0	B & L	\$ 2
3 Pawtucket	Lowell M. S.	—	1848	—	—	B & L	\$ 3
4 Vulcan	Hinkley & Drury	\$ 144	1848	15x20"	4-4-0	B & L	\$ 77
5 Advance	Hinkley	\$ 1233	1875	16x24"	4-4-0	B & L	\$ 5
6 Ambler	Hinkley	\$ 1241	1876	16x24"	4-4-0	B & L	\$ 6
7 Logan	Hinkley & Drury	\$ 257	1850	16x20"	4-4-0	Scrap	BL & N
8 Logan	B. L. & N. R. R.	—	1870	17x20"	4-4-0	N & L	\$ 4
9 Sailor Boy	Boston L. W.	\$ 268	1850	15x20"	4-4-0	B & L	\$ 8
10 Transport	Boston L. W.	\$ 267	1850	16x20"	4-6-0	B & L	\$ 9
10 Woburn	Boston & Lowell R. R.	—	1850	12x18"	4-4-0	B & L	\$ 10
11 Muzzey	Boston L. W.	—	1852	14x20"	4-4-0	Rebuilt by	Ind
12 Essex	B. L. & N. R. R.	—	1869	14x20"	4-4-0	B & L	\$ 11
12 Winchester	Essex Co.	—	1851	15x20"	4-4-0	Exploded, renamed	Ind
13 Daniel Abbott	Rebuilt BL&N R. R.	—	1867	15x20"	4-4-0	B & L	\$ 12
13 Daniel Abbott	Amoskeag	\$ 44	1852	15x22"	4-4-0	Scrap	BL&N
14 Storror	B. L. & N. R. R.	—	1872	16x20"	4-4-0	N & L	\$ 2
15 Leader	Hinkley & Drury	\$ 474	1853	15x24"	4-4-0	B & L	\$ 14
15 Leader	?	?	?	?	?	Scrap	BL&N 1871
16 ?	B. L. & N. R. R.	—	1872	16x24"	4-4-0	B & L	\$ 15
17 Wilton	?	?	?	?	?	?	?
18 Jesse Bowers	Taunton L. W.	\$ 10	1848	14x18"	4-4-0	N & L	\$ 19
19 Higginson	Amoskeag	—	1854	16x20"	4-4-0	N & L	\$ 3
20 Billerica	Boston L. W.	\$ 610	1856	16x22"	4-4-0	B & L	\$ 19
21 Pennichuck	Mason	\$ 304	1869	16x24"	4-4-0	B & L	\$ 20
22 Boardman	Taunton L. W.	\$ 219	1857	15x20"	4-4-0	N & L	\$ 5
23 Wm. Sturgis	Mason	\$ 72	1857	15x22"	4-4-0	N & L	\$ 6
Medford	Lowell M. S.	\$ 145	1854	15x22"	4-4-0	Renamed	Ind
24 Manager	Rebuilt BL&N R. R.	—	1869	15x22"	4-4-0	B & L	\$ 23
25 Boston	Hinkley	—	1876	17x24"	4-4-0	N & L	\$ 17
25 Boston	Locks & Canal Co.	\$ 3	1835	11x16"	0-4-0	Scrap	BL&N 1860 (?)
26 Lowell	Mason	\$ 114	1862	15x22"	4-4-0	B & L	\$ 25
26 Lowell	Locks & Canal Co.	\$ 2	1835	11x16"	0-4-0	Scrap	BL&N 1863 (?)
27 McNeill	Manchester	\$ 48	1864	16x22"	4-4-0	B & L	\$ 26
Lawrence	Hinkley & Drury	\$ 137	1847	15x18"	4-4-0	Renamed	Ind
28 Lion	Hinkley	\$ —	1866	15x20"	0-4-0	B & L	\$ 28
29 Nashua	Locks & Canal Co.	\$ —	1836	11x16"	0-4-0	Scrap	BL&N 1865 (?)
29 Nashua	Mason	\$ 231	1866	16x24"	4-4-0	N & L	\$ 11
30 Tiger	B. L. & N. R. R.	—	1866	15x20"	0-4-0	N & L	\$ 1
31 Ajax	Hinkley & Drury	\$ 36	1845	13½x20"	0-4-0	Scrap	BL&N 1866
31 Ajax	Hinkley	—	1867	15x20"	0-4-0	B & L	\$ 31
32 Cambridge	Mason	\$ 252	1867	16x24"	4-4-0	B & L	\$ 32
33 Merrimac	Locks & Canal Co.	—	1836	—	—	Scrap	BL&N 1865 (?)
33 Merrimac	Mason	\$ 275	1868	16x24"	4-4-0	Renamed	Ind
Milford	—	—	—	N & L	?	?	?
34 Chelmsford	Mason	\$ 278	1868	16x24"	4-4-0	N & L	\$ 12
35 Wilmington	Mason	\$ 303	1869	16x24"	4-4-0	B & L	\$ 35
36 Vesta	Norris	—	1848	13x20"	4-4-0	Scrap	BL&N 1870
36 Vesta	Hinkley	\$ 1023	1871	15x22"	0-4-0	B & L	\$ 36
37 Leopard	B. L. & N. R. R.	—	1871	15x20"	0-4-0	B & L	\$ 37
38 Stoneham	Hinkley	\$ —	1872	16x24"	4-4-0	B & L	\$ 38
39 Panther	B. L. & N. R. R.	—	1872	10x24"	0-4-0	B & L	\$ 39
40 Tyngsboro	Mason	\$ 348	1870	16x24"	4-4-0	B & L	\$ 40
41 Somerville	Rhode Island	\$ 175	1870	16x24"	4-4-0	N & L	\$ 14
42 Eagle	Lowell M. S.	\$ 132	1853	?	4-4-0	Scrap	BL&N 1869
42 Eagle	Rhode Island	\$ 178	1870	16x24"	4-4-0	B & L	\$ 42
43 Baldwin	Locks & Canal Co.	\$ —	1847	11x14"	4-4-0	Rebuilt	Ind
	Boston L. W.	—	—	Scrap	BL&N 1868	?	?

43	Groton	Rhode Island	#	176	1870	16x24"	4-4-0	B & L	\$43
44	Cloud	Lowell M. S.	#	134	1853	14x20"	4-4-0	Scrap	BL&N 1869
44	Cloud	Rhode Island	#	—	1870	16x24"	4-4-0	B & L	\$44
45	Arlington	Rhode Island	#	262	1871	15x24"	4-4-0	B & L	\$34
46	Lexington	Rhode Island	#	263	1871	15x24"	4-4-0	B & L	\$33
47	Bedford	Hinkley	#	1104	1872	16x24"	4-4-0	N & L	\$15
48	Goliath	Locks & Canal Co.	#	—	1842	12½x16"	4-4-0	Scrap	BL&N 1870 (?)
48	Goliath	Hinkley	#	1085	1872	15x22"	0-4-0	B & L	\$7
49	Amherst	Mason	#	458	1872	16x24"	4-4-0	B & L	\$24
50	Hercules	Hinkley	#	1140	1873	15x22"	0-4-0	B & L	\$13
51	Milo	Hinkley & Drury	#	33	1845	13½x20"	4-4-0	Scrap	BL&N 1872
51	Milo	Hinkley	#	1149	1873	14x22"	0-4-0	B & L	\$17
52	Indian Head	Hinkley & Drury	#	147	1848	14x18"	4-4-0	Scrap	BL&N 1871
52	Indian Head	B. L. & N. R. R.	#	—	1872	15x22"	0-4-0	N & L	\$9
53	Mystic	Mason	#	502	1873	17x24"	4-4-0	B & L	\$29
54	Suffolk	Mason	#	503	1873	17x24"	4-4-0	B & L	\$30
55	Samson	Locks & Canal Co.	#	—	1842	12½x16"	0-4-0	Scrap	BL&N 1873 (?)
55	Samson	Hinkley	#	—	1874	15x22"	0-4-0	N & L	\$10
56	Mars	Hinkley & Drury	#	186	1848	15x20"	4-4-0	Scrap	BL&N 1872
56	Mars	B. L. & N. R. R.	#	—	1873	16x22"	0-4-0	B & L	\$18
57	Middlesex	Hinkley	#	—	1876	16x24"	4-4-0	B & L	\$21
58	Salem	Hinkley	#	1213	1874	16x24"	4-4-0	B & L	\$58
59	Concord	Locks & Canal Co.	#	—	1836	11x16"	0-4-0	Scrap	BL&N 1872 (?)
59	Concord	Manchester	#	—	1874	17x24"	4-4-0	B & L	\$27
60	Essex	Manchester	#	—	1874	17x24"	4-4-0	B & L	\$64
61	Hillsborough	Hinkley	#	1214	1874	16x24"	4-4-0	B & L	\$22
62	Hector	Hinkley & Drury	#	197	1848	13½x20"	0-4-0	Scrap	BL&N 1876 (?)
62	Hector	Hinkley	#	—	1878	15x22"	0-4-0	B & L	\$68
63	Relay	Hinkley	#	—	1879	15x22"	0-4-0	N & L	\$5

The Boston & Lowell R. R. Roster of locomotives for 1884 indicates the "Hector" as being built in 1878 and the "Relay" in 1879. If such is the case the last two engines on the above list should be stricken from Mr. Yeaton's original list. I have indicated the road and number each engine was assigned after Dec. 1, 1877.

NASHUA & LOWELL R. R.

From December 1, 1877 to October 1, 1880, this road was operated separately.

On the latter date it was leased to the Boston & Lowell R. R. for 99 years.

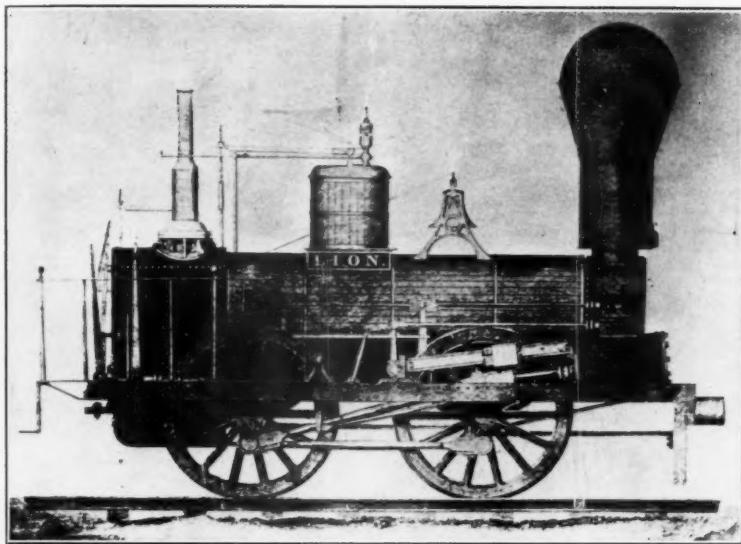
The following locomotives were on the Nashua & Lowell R. R. during this period and their disposition is shown in the Boston & Lowell series.

1	Tiger	B. L. & N. R. R.		1866	15x20"	0-4-0	B & L	\$66	
2	Daniel Abbott	B. L. & N. R. R.		1872	15x22"	4-4-0	B & L	\$72	
3	Jesse Bowers	Amoskeag	#	—	1854	16x20"	4-4-0	B & L	\$71
4	Logan	B. L. & N. R. R.		1870	17x20"	4-4-0	B & L	\$62	
5	Pennichuck	Taunton L. W.	#	219	1857	15x20"	4-4-0	Sold—Northern R R	
6	Boardman	Mason	#	72	1857	15x22"	4-4-0	B & L	\$70
7	Lawrence	Hinkley & Drury	#	137	1847	15x18"	4-4-0	Scrap	B & L 1880
8	Relay	Hinkley	#	—	1879	15x22"	0-4-0	B & L	\$45
9	Indian Head	B. L. & N. R. R.		1872	15x22"	0-4-0	B & L	\$67	
10	Samson	Hinkley	#	—	1874	15x22"	0-4-0	B & L	\$63
11	Nashua	Mason	#	231	1866	16x24"	4-4-0	B & L	\$55
12	Chelmsford	Mason	#	278	1868	16x24"	4-4-0	B & L	\$56
13	Milford	Mason	#	275	1868	16x24"	4-4-0	B & L	\$61
14	Somerville	Rhode Island	#	175	1870	16x24"	4-4-0	B & L	\$69
15	Bedford	Hinkley	#	1104	1872	16x24"	4-4-0	B & L	\$57
16	Salem	Hinkley	#	1213	1876	16x24"	4-4-0	B & L	\$58
17	Manager	Hinkley	#	—	1876	17x24"	4-4-0	B & L	\$60
18	Essex	Manchester	#	—	1874	17x24"	4-4-0	B & L	\$64
19	Wilton	Taunton L. W.	#	10	1848	14x18"	4-4-0	B & L	\$59

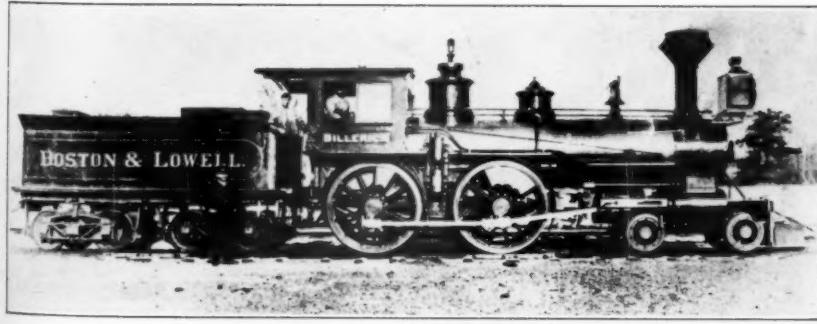
BOSTON & LOWELL R. R.

Locomotives on the Boston & Lowell R. R. from December 1, 1877 up to the time the road was leased to the Boston & Maine R. R. for 99 years on June 22, 1887. The number assigned these engines by the Boston & Maine R. R. follows the Boston & Lowell R. R. number.

1 Archer	Hinkley	#1247	1877	17x24"	4-4-0	
301 Archer					4-4-0	Scrap—B & M 1904
2 Rumford	Hinkley & Drury	# —	1848	16x18"	4-4-0	Scrap—B & L 1884
2 Rumford	Manchester	#1260	1886	17x24"	4-4-0	
302 Rumford					4-4-0	Renumbered 650
3 Pawtucket	Lowell M. S.	# —	1848			Scrap B & L 1879
3 Pawtucket	Manchester	# —	1880	17x24"	4-4-0	
303 Pawtucket	Rebuilt &				4-4-0	Renumbered 687
4 Alert	Hinkley	# —	1879	15x22"	0-4-0	
304 Alert	Sold by B & M in		1903	to	0-4-0	J. F. Shaw & Co.
5 Advance	Hinkley	#1233	1876	16x24"	4-4-0	
305 Advance					4-4-0	Scrap—B & M 1906
6 Ambler	Hinkley	#1241	1876	16x24"	4-4-0	
306 Ambler					4-4-0	Scrap—B & M 1904
7 Goliath	Hinkley	#1085	1872	15x22"	0-4-0	
307 Osgood					0-4-0	Scrap—B & M 1887
307 Osgood	B & M R. R.		1888	15x22"	0-4-0	Scrap—B & M 1906
8 Sailor Boy	Boston L. W.	# 268	1850	15x20"	4-4-0	Scrap—B & L 1882
8 Ashuelot	Manchester	#1144	1883	17x24"	4-4-0	
308 Ashuelot					4-4-0	Scrap—B & M 1905
9 Transport	Boston L. W.	# 267	1850	16x20"	4-6-0	Rebuilt by
	B & L R. R.		1877	15x24"	4-4-0	
309 Shylock	Sold by B & M in		1898	to	4-4-0	Poulterer & Co.
10 Woburn	B & L R. R.		1850	12x18"	4-4-0	Scrap—B & L 1880
10 Woburn	Schenectady	#1443	1883	17x24"	4-4-0	
310 Woburn	Rebuilt &				4-4-0	Renumbered 680
11 Muzzey (See Note)	Boston L. W.	# —	1852	14x20"	4-4-0	Rebuilt
11 Nashua	B. L. & N. R. R.		1869	14x20"	4-4-0	Scrap B & L—1887
311 Traveler	Mason	# 231	1866	16x24"	4-4-0	Formerly B & L \$55
12 Winchester	Sold by B & M in		1897	to	4-4-0	Poulterer & Co.
12 Winchester	B. L. & N. R. R.		1867	15x20"	4-4-0	Scrap—B & L 1881
312 Winchester	Rhode Island	#1397	1883	12x22"	0-4-0	
13 Hercules	Hinkley	#1140	1873	14x24"	0-4-0	Scrap—B & M 1905
313 Shawsheen				15x22"	0-4-0	
14 Storrow	Boston L. W.	# 474	1853	15x24"	4-4-0	Scrap—B & M 1887
314 Storrow	B & M R. R.		1888	15x22"	0-4-0	Scrap—B & M 1906
15 Leader	B. L. & N. R. R.		1872	16x24"	4-4-0	
315 Leader					4-4-0	Scrap—B & M 1903
16 Monitor	Baldwin	#4238	1878	12x22"	0-4-0	Dummy
316 Monitor	Sold by B & M in		1895	to		Tremont & Suffolk Co.
17 Milo	Hinkley	#1149	1873	14x22"	0-4-0	
317 Milo	Sold by B & M in		1893	0-4-0		
18 Mars	B. L. & N. R. R.		1874	16x22"	0-4-0	
318 Mars					0-4-0	Scrap—B & M 1894
19 Higginson	Boston L. W.	# 610	1856	15x22"	0-4-0	Scrap—B & L 1881
19 Higginson	Manchester		1882	15x22"	0-4-0	
319 Higginson	Mason	# 304	1869	16x24"	4-4-0	
20 Billerica					4-4-0	Scrap—B & M 1904
320 Billerica					4-4-0	Scrap—B & M 1903
21 Middlesex	Hinkley		1875	16x24"	4-4-0	
321 Sudbury					4-4-0	Scrap—B & M 1903
22 Hillsboro	Hinkley	#1214	1874	16x24"	4-4-0	
322 Hillsboro	Sold by B & M in		1898	to	4-4-0	Poulterer & Co.



Nashua & Lowell R. R. "Lion." Hinkley & Drury—Feb. 14, 1844



Boston & Lowell R. R., "Billerica"—Mason, 1869

23 Me...
(See
323 Jess...
323 Jess...
24 Am...
324 Am...
25 Bos...
(See
325 Stan...
26 Low...
326 Mc...
27 Con...
327 Con...
28 Lion...
28 Lion...
328 Zebu...
29 Mys...
329 Mc...

30 Suff...

330 Gen'

31 Ajax

331 Ajax

331 Ajax

32 Cam...

332 Cam...

333 Lexi...

34 Arli...

334 Berli...

35 Wil...

335 Gen'

36 Vesta...

336 Vesta...

37 Leop...

37 Leop...

337 Hadl...

39 Pant...

40 Tyng...

340 Tyng...

41 Vant...

341 Vant...

42 Eagle...

342 Harr...

43 Grot...

343 Falco...

44 Cloud...

344 Cloud...

45 Relay...

345 Relay...

46 Relia...

346 Relia...

47 Merr...

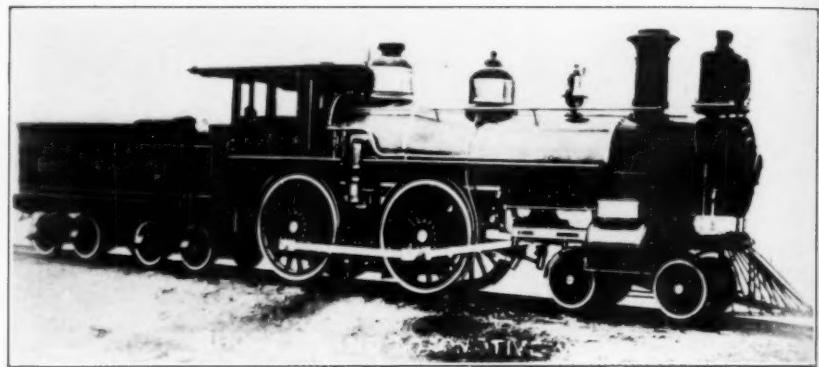
347 Kirk...

48 Mess...

348 Mess...

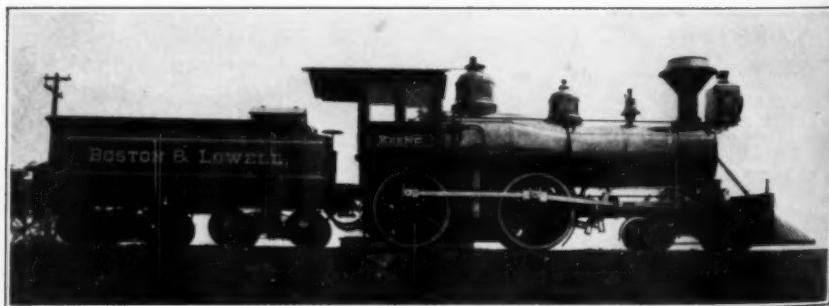
49 Ensig...

349 Ensig...



Boston & Lowell R. R. "Aeolus"—Rhode Island, 1884

Courtesy of Benj. Thomas



Boston & Lowell R. R. "Keene"—N. Y. Loco. Wks., 1884

23 Medford (See Note)	Lowell M. S. B. L. & N. R. R.	# 154	1858	15x22"	4-4-0	Rebuilt
323 Jesse Bowers			1869	15x22"	4-4-0	
323 Jesse Bowers	Portland	# 589	1888	17x24"	4-4-0	Scrap—B & M 1887
24 Amherst	Mason	# 458	1872	16x24"	4-4-0	Renumbered 725
324 Amherst						
25 Boston (See Note)	Mason	# 114	1862	14x22"	4-4-0	Scrap—B & M 1908
325 Stampede	B & L R. R.		1884	15x22"	4-4-0	Rebuilt by
26 Lowell	Manchester	# 48	1864	16x22"	4-4-0	
326 McNeill	Manchester	# —	1874	17x24"	4-4-0	Scrap—B & M 1899
27 Concord	B & M R. R.		1897	17x24"	4-4-0	Rebuilt
327 Concord	Hinkley	# —	1866	15x20"	0-4-0	Renumbered 667
28 Lion	B & L R. R.		1885	16x24"	0-4-0	Scrap—B & L 1885
28 Lion						
328 Zebra	Mason	# 502	1873	17x24"	4-4-0	0-4-0 Scrap—B & M 1905
29 Mystic						
329 McBeth	B & M R. R.		1897			
30 Suffolk	Mason	# 503	1873	17x24"	4-4-0	4-4-0 Rebuilt
330 Gen'l. Garfield	B & M R. R.					4-4-0 Renumbered 661
31 Ajax	Hinkley	# —	1867	15x20"	0-4-0	
331 Ajax	B & M R. R.					0-4-0 Scrap—B & M 1887
331 Ajax	Mason	# 252	1867	15x22"	0-4-0	Scrap—B & M 1906
32 Cambridge	Rhode Island	# 263	1871	16x24"	4-4-0	
332 Cambridge		# 262	1871	16x24"	4-4-0	Scrap—B & M 1908
33 Lexington	Rhode Island		1899	to	4-4-0	Scrap—B & M 1908
333 Lexington	Sold by B & M in	# 303	1869	16x24"	4-4-0	
34 Arlington	Mason					4-4-0 Poulterer & Co.
334 Berlin	Hinkley	# 1023	1871	15x22"	0-4-0	
35 Wilmington	Sold by B & M in		1892	to	0-4-0	Scrap—B & M 1903
335 Gen'l. Arthur	B. L. & N. R. R.		1871	15x20"	0-4-0	
36 Vesta	B & L R. R.		1887	16x24"	0-4-0	
336 Vesta	Hinkley	# —	1872	15x22"	0-4-0	
37 Leopard	Sold by B & M in		1897	to	4-4-0	Poulterer & Co.
37 Leopard	Baldwin	# 2842	1880	13x24"	0-4-0	
337 Leopard	Sold by B & M in		1896	to	0-4-0	Poulterer & Co.
38 Stoneham	Mason	# 348	1870	16x24"	4-4-0	
338 Hadley	Hinkley	# —	1878	15x22"	4-4-0	4-4-0 Scrap—B & M 1904
339 Panther	Sold by B & M in		1899	to	4-4-0	
40 Panther	Baldwin	# 178	1870	16x24"	4-4-0	
40 Tyngsboro	Sold by B & M in		1870	to	4-4-0	
340 Tyngsboro	Mason	# 176	1870	16x24"	4-4-0	
41 Vantage	Hinkley	# —	1878	15x22"	4-4-0	
341 Vantage	Sold by B & M in		1899	to	4-4-0	Poulterer & Co.
42 Eagle	Rhode Island	# 178	1870	16x24"	4-4-0	
342 Harrisville	Sold by B & M		1870	to	4-4-0	Poulterer & Co.
43 Groton	Rhode Island	# 176	1870	16x24"	4-4-0	
343 Falcon	Sold by B & M in		1897	to	4-4-0	Poulterer & Co.
44 Cloud	Rhode Island	# —	1870	16x24"	4-4-0	
344 Cloud	Sold by B & M in		1896	to	4-4-0	Poulterer & Co.
45 Relay	Hinkley	# —	1879	15x22"	0-4-0	
345 Relay	Hinkley	# —	1879	16x24"	4-4-0	0-4-0 Scrap—B & M 1895
46 Reliance	Sold by B & M in		1903	to	4-4-0	
346 Reliance	Baldwin	# 4890	1879	12x22"	Dummy	
47 Merrimac	Sold by B & M		1903	to	Dummy	F. B. Maxim
347 Kirk Boott	Hinkley	# —	1879	17x24"	4-4-0	
48 Messenger						
348 Messenger	Hinkley	# —	1879	16x24"	4-4-0	4-4-0 Scrap—B & M 1905
49 Ensign						
349 Ensign	Hinkley	# —	1879	16x24"	4-4-0	4-4-0 Scrap—B & M 1903

50	Dabster	Hinkley	\$ —	1879	16x24"	4-4-0	Scrap—B & M 1901	78 Mo
350	Dabster	Hinkley	\$ —	1880	15x22"	0-4-0	Scrap—B & M 1905	378 Mo
51	Patrol	Hinkley	\$ —	1880	0-4-0	Scrap—B & M 1905	79 Belv	
351	Patrol	Hinkley & Drury	\$ 137	1847	15x18"	4-4-0	Scrap—B & L 1880	379 Belv
52	Lawrence	Manchester	\$ —	1880	17x24"	4-4-0	Rebuilt & renamed	80 Aeot
52	Lawrence	B & M R. R.	\$ —	1899	17x24"	4-4-0	Renumbered 685	390 Aeot
352	P. T. Jackson	Rhode Island	\$ 913	1880	18x24"	4-4-0		81 Mo
53	Express	Rhode Island	\$ 914	1880	19x26"	4-6-0	Renumbered 807	381 Mo
54	Convoy	Rhode Island	\$ 914	1880	4-6-0	Renumbered 1934	382 Kee	
354	Convoy	Mason	\$ 231	1866	16x24"	4-4-0	Renumbered B & L II	147 Acto
55	Nashua	Rhode Island	\$ 1741	1887	19x26"	4-6-0		383 Acto
55	Colossus	Mason	\$ 278	1868	19x26"	4-6-0	Renumbered 1935	148 West
355	Colossus	Hinkley	\$ 1104	1872	16x24"	4-4-0	Scrap—B & M 1904	384 West
56	Chelmsford	Hinkley	\$ 1213	1874	16x24"	4-4-0	Scrap—B & M 1898	149 Mon
356	Chelmsford	Taunton L. W.	\$ 10	1848	14x18"	4-4-0	Scrap—B & M 1900	385 Mon
57	Bedford	Rhode Island	\$ 909	1880	17x26"	4-4-0	Scrap—B & L 1880	150 Gre
357	Bedford	Rebuilt—B & M R. R.	\$ —	1899	4-4-0	Renumbered 693	386 Gre	
58	Salem	Hinkley	\$ —	1876	17x24"	4-4-0	Scrap—B & M 1897	151 Benj
358	Mishawum	Mason	\$ 275	1868	16x24"	4-4-0	Scrap—B & M 1892	387 Benj
59	Wilton	B. L. & N. R. R.	\$ —	1870	17x20"	4-4-0	Scrap—B & L 1885	152 Lynn
59	Wilton	Manchester	\$ 1261	1886	16x22"	0-4-0	Scrap—B & M 1908	388 Lynn
359	Wilton	Hinkley	\$ —	1874	15x22"	0-4-0	Scrap—B & M 1889	168 Hotw
60	Manager	Hinkley	\$ —	1874	17x24"	4-4-0	Rebuilt	389 Hotw
360	Manager	Manchester	\$ 1444	1898	17x24"	4-4-0	Renumbered 684	169 Pone
61	Milford	Schenectady	\$ 1444	1883	17x24"	4-4-0	Rebuilt	390 Pone
361	Milford	Manchester	\$ —	1904	17x24"	4-4-0	Renumbered 683	170 Sou
62	Logan	B. L. & N. R. R.	\$ —	1866	15x20"	0-4-0	Scrap—B & L 1885	391 Sou
62	Logan	B. & M R. R.	\$ —	1888	15x22"	0-4-0	Scrap—B & M 1905	171 Dub
362	Taurus	Sold by B & M in	\$ —	1873	15x22"	4-4-0		392 Way
63	Samson	Hinkley	\$ —	1895	4-4-0			172 Read
363	Albany	Hinkley	\$ —	1878	15x22"	0-4-0	Scrap—B & M 1889	393 Cori
64	Essex	Manchester	\$ —	1874	17x24"	4-4-0	Rebuilt	173 Atla
364	Assabet	B & M R. R.	\$ —	1898	17x24"	4-4-0	Renumbered 684	394 King
65	Marlboro	Schenectady	\$ 1444	1883	17x24"	4-4-0	Rebuilt	174 Paci
365	Marlboro	Manchester	\$ —	1904	17x24"	4-4-0	Renumbered 683	395 Ham
66	Tiger	B. L. & N. R. R.	\$ —	1866	15x20"	0-4-0	Scrap—B & L 1885	175 Pem
366	Logan	B. & M R. R.	\$ —	1888	15x22"	0-4-0	Scrap—B & M 1905	396 Pem
67	Indian Head	B. L. & N. R. R.	\$ —	1873	15x22"	4-4-0		176 Spee
367	Indian Head	Sold by B & M in	\$ —	1895	4-4-0			397 Spee
68	Hector	Hinkley	\$ —	1878	15x22"	0-4-0		177 Swift
368	Hector	Hinkley	\$ —	1878	0-4-0			398 Swift
69	Somerville	Rhode Island	\$ 175	1870	16x24"	4-4-0	Scrap—B & M 1908	178 Belm
369	Ware	Mason	\$ 72	1857	15x22"	4-4-0	Scrap—B & M 1908	399 Belm
70	Boardman	B & L R. R.	\$ —	1887	15x22"	4-4-0	Rebuilt	179 Wav
370	Boardman	Amoskeag	\$ —	1854	16x20"	4-4-0	Scrap—B & M 1910	400 Wav
71	Jesse Bowers	Manchester	\$ 262	1886	16x22"	0-4-0	Scrap—B & L 1884	180 Desp
71	Peabody				0-4-0	Renumbered 61	401 Desp	
371	Paugus	B. L. & N. R. R.	\$ —	1872	16x20"	4-4-0		181 Dre
72	Daniel Abbott	Sold by B & M in	\$ —	1899	to	4-4-0	Poulterer & Co.	402 Dre
372	Daniel Abbott	Manchester	\$ —	1882	15x22"	0-4-0		182 War
73	Pennichuck				0-4-0			403 War
373	Pennichuck	Manchester	\$ 1141	1883	17x24"	4-4-0	Scrap—B & M 1905	183 Vang
74	Lochinvar	Manchester	\$ 1142	1883	17x24"	4-4-0		184 Vang
374	Lochinvar	Manchester	\$ 1142	1883	17x24"	4-4-0	Renumbered 651	185 Cond
75	Ivanhoe	Hinkley & Drury	\$ 1396	1883	18x24"	4-4-0	Scrap—B & M 1906	186 Dict
375	Ivanhoe	Rhode Island	\$ 1396	1883	18x24"	4-4-0	Rebuilt	187 Dict
76	Pegasus	Manchester	\$ 144	1848	18x24"	4-4-0	Renumbered 830	188 Mind
376	Pegasus	Hinkley & Drury	\$ 1398	1883	15x20"	4-4-0	Scrap—B & L 1881	189 Mind
77	Vulcan	Rhode Island	\$ 1398	1883	16x24"	0-4-0	Scrap—B & M 1904	190 Mind
77	Vulcan				0-4-0			
377	Vulcan							

78	Monadnock	Manchester	\$1145	1883	17x24"	4-4-0	
378	Monadnock	Baldwin	\$7149	1884	12x22"	Dummy	Renumbered 652.
79	Belvidere	Sold by B & M in Rhode Island	#1453	1903	to	Dummy—F. B. Maxim	
379	Belvidere	Manchester		1884	18x24"	4-4-0	Rebuilt
80	Aeolus	Manchester		1905	4-4-0	Renumbered 831	
380	Aeolus	Manchester	\$1173	1884	20x24"	4-6-0	
81	Monarch	New York L. W.			18x24"	4-6-0	Renumbered 1914
381	Monarch	Rhode Island	\$1466	1884	17x24"	4-4-0	
82	Keene	Rhode Island	\$1491	1884	17x24"	0-4-0	Renumbered 610
382	Keene	Rhode Island	\$1492	1884	17x24"	4-4-0	Scrap—B & M 1909
147	Acton	Manchester	\$1244	1885	17x24"	4-4-0	Scrap—B & M 1909
383	Acton	Manchester	\$1245	1904	17x24"	4-4-0	Rebuilt
148	Westfield	Manchester	\$1245	1885	17x24"	4-4-0	Renumbered 688
384	Westfield	Manchester	\$1246	1885	17x24"	4-4-0	Renumbered 652
149	Montvale	Manchester	\$1263	1886	17x24"	4-4-0	Scrap—B & M 1908
385	Montvale	Manchester	\$1264	1886	18x24"	4-4-0	Renumbered 654
150	Greenfield	Manchester	\$1265	1886	18x24"	4-4-0	Scrap—B & M 1909
386	Greenfield	Manchester	\$1266	1886	16x24"	4-4-0	Renumbered 866
151	Bennington	Schenectady	\$2113	1886	18x24"	4-6-0	Scrap—B & M 1908
387	Bennington	Schenectady	\$2114	1886	18x24"	4-6-0	Renumbered 1923
152	Lyndeboro	Schenectady	\$2115	1886	18x24"	4-6-0	Renumbered 1924
388	Lyndeboro	Hamlet	\$2116	1899	4-6-0	Renumbered 1925	
168	Hotspur	Schenectady	\$2116	1886	18x24"	4-6-0	Rebuilt
389	Hotspur	Rebuilt	\$2117	1901	4-6-0	Renumbered 1926	
169	Ponemah	Speedwell	\$1277	1886	17x24"	4-4-0	Scrap—B & M 1905
390	Ponemah	Speedwell	\$1276	1886	17x24"	4-4-0	Scrap—B & M 1908
170	Souhegan	Manchester	\$ —	1886	16x24"	0-4-0	Renumbered 52
391	Souhegan	Manchester	\$ —	1886	16x24"	0-4-0	Renumbered 53
171	Dublin	B & L R. R.		1887	18x24"	4-4-0	
392	Wayland	Manchester	\$1293	1887	18x24"	4-6-0	Renumbered 800
172	Reading	Manchester		1906	4-6-0	Rebuilt	
393	Coriolanus	Manchester	\$1274	1887	17x24"	4-4-0	Renumbered 1905
173	Atlantic	Manchester	\$1275	1887	17x24"	4-4-0	Renumbered 755
394	King Lear	Manchester	\$1289	1887	17x24"	4-4-0	Renumbered 756
174	Pacific	Manchester	\$1290	1887	17x24"	4-4-0	Scrap—B & M 1909
395	Hamlet	Phaeton	\$1296	1887	18x24"	4-6-0	
175	Pemberton	Phaeton	\$1295	1887	18x24"	4-6-0	Renumbered 1906
396	Pemberton	Manchester			4-6-0	Renumbered 1907	
176	Speedwell						
397	Speedwell						
177	Swiftsure						
398	Swiftsure						
178	Belmont						
399	Belmont						
179	Waverly						
400	Waverly						
180	Despatch						
401	Despatch						
181	Dreadnaught						
402	Dreadnaught						
182	Warrior						
403	Warrior						
183	Vanguard						
404	Vanguard						
184	Conqueror						
405	Othello						
185	Phaeton						
406	Phaeton						
186	Dictator						
407	Dictator						
187	Minotaur						
408	Minotaur						

188 Captain	Manchester	\$1297	1887	18x24"	4-6-0	
409 Captain				4-6-0	Renumbered	1908
189 Triumph	Manchester		1887	18x24"	4-6-0	
410 Triumph				4-6-0	Renumbered	1909
220 Waltham	Rhode Island		1887	17x24"	2-6-0	
411 Waltham				2-6-0	Scrap—B & M	1905
221 Weston	Rhode Island		1887	17x24"	2-6-0	
412 Weston				2-6-0	Scrap—B & M	1905

To Mr. Yeaton's list, I have made such additions and corrections as appear in a roster of locomotives of the Boston & Lowell R. R. dated 1884. Some of our members may be able to shed some light on some of the unknown places and if so, I shall be glad to hear from them.

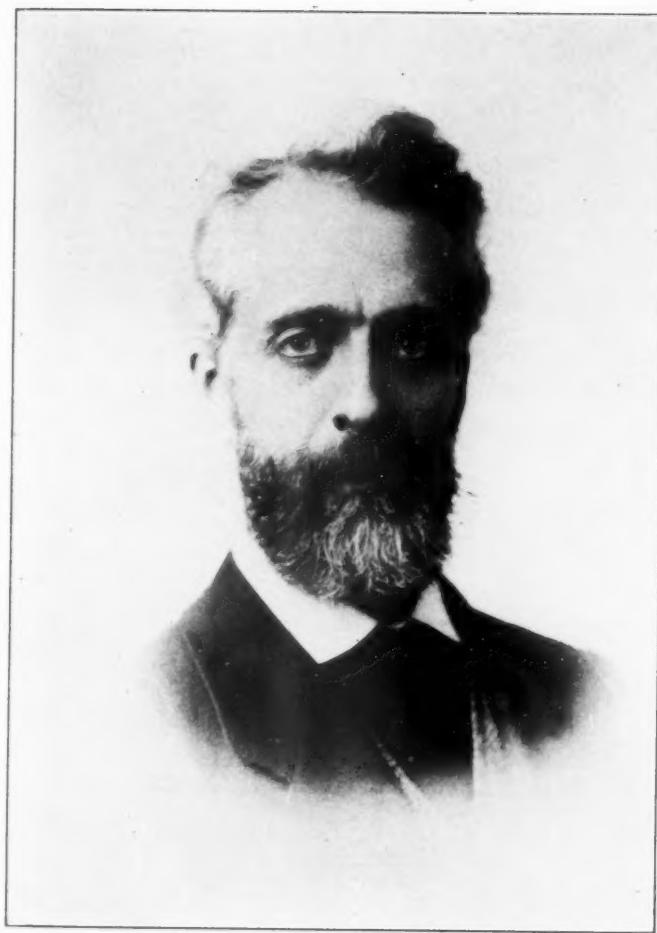
This list will be continued and in BULLETIN No. 32 will appear the engines from the Connecticut & Passumpsic Rivers R. R. and the Connecticut River R. R.

(NOTE: Mr. Yeaton states in his list, the "Muzzey" was not rebuilt, that the "Boston" was rebuilt by Rhode Island in 1884 and that the "Medford" was not rebuilt. This is contrary to the Boston & Lowell roster of 1884 which has been closely followed in arranging the above list.)

THE BRIDGE BUILDER

An old man, going a lone highway,
 Came at the evening, cold and gray
 To a chasm vast and deep and wide
 Through which was flowing a sullen tide.
 The old man crossed in the twilight dim,
 The sullen stream had no fear for him
 But he turned when safe on the other side
 And built a bridge to span the tide.
 "Old man," said a fellow-pilgrim near,
 "You are wasting your strength with building here,
 Your journey will end with the ending day;
 You will never again pass this way;
 You've passed the chasm deep and wide,
 Why build you this bridge at evening tide?"
 The builder lifted his old gray head,
 "Good friend, in the path I have come," he said,
 "There followest after me today
 A youth whose feet must pass this way.
 This chasm that has been naught to me
 To that fair-haired youth may a pitfall be.
 He, too, must cross in the twilight dim.
 Good friend, I am building this bridge for him."

Will Allen Drumgoole.



Charles Shaler Smith, C. E.



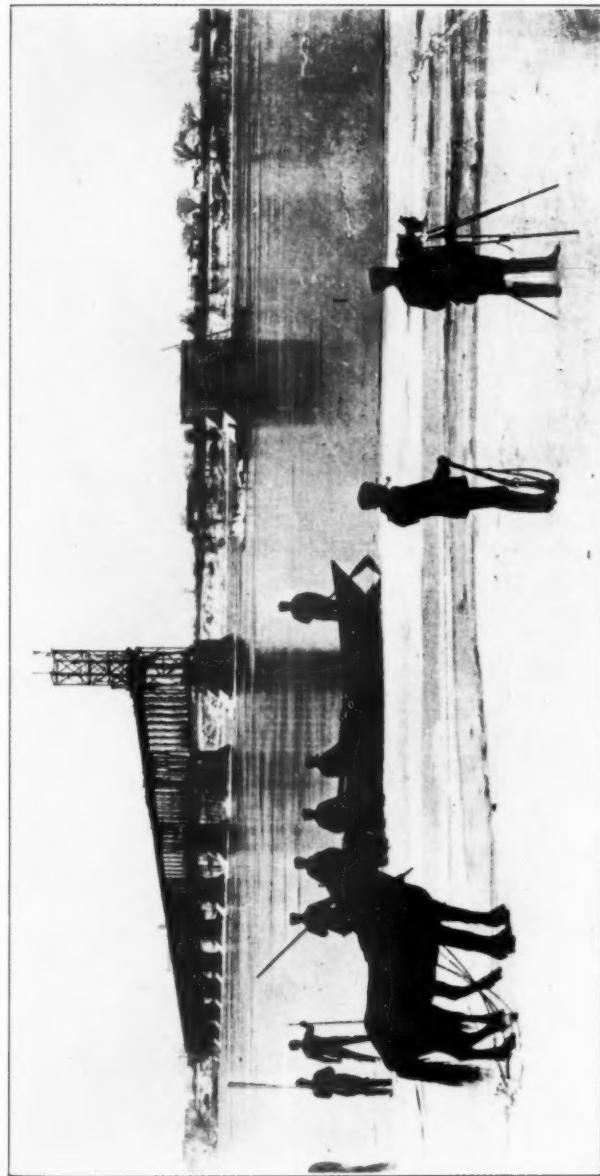
Bridge at High Bridge, Ky. on the present Southern Ry.

Courtesy C. E. Fisher



Canadian Pacific Railway St. Lawrence River Bridge at Lachine, Que.
Trilingual signboard in English, French and Iroquois

Courtesy R. R. Brown



The Lachine Bridge During Construction

Courtesy Canadian Pacific Ry.

Courtesy Canadian Pacific Ry.

The Completed Lachine Bridge



A Man and A Bridge

By MARY G. S. CUMMING

 PERIOD of time, extending over a century—steel rails stretching across a continent—hundreds of bridges—thousands of men—such is the Canadian Pacific Railway. This article deals only with one bridge and one man. The bridge spans the St. Lawrence River just above the Lachine Rapids, and the man, Charles Shaler Smith, designed and built the bridge.

Charles Shaler Smith, Civil Engineer, was born in Pittsburgh, Pa., in 1836. His parents died when he was quite young and his boyhood was spent at the home of his grandfather, Judge Charles Shaler of the same place. Judge Shaler wanted his grandson to study law, but this profession had no appeal to the boy, whose pioneer spirit felt the call of the open road; whose imaginative mind saw the romance of the iron rails stretching their lengths over the land, and pictured the problems to be solved when rivers and chasms were to be spanned and, in after years, he was at his best when working on these problems. So he chose engineering as his profession.

After finishing at a private school, probably through the present high school grade, the boy opposed his grandfather again by going into a foundry or iron works, there to learn all of that practical knowledge now taught in technical training schools. In 1852 he took a position as rodman on the Mine Hill and Schuylkill Haven Railroad, and was soon promoted to that of leveler. Two years later he was employed in railroad surveys in the mineral regions of Lake Superior. In 1855 he entered the service of the Louisville and Nashville Railroad and became assistant to Mr. Albert Finck. Step by step he was mounting the ladder of his profession.

Then came the War between the States. He entered at once the army of the Confederacy, was commissioned as Captain of Engineers and Ordnance, and remained in the service until the close of the war. During this period he was put in charge of the construction of the Confederate States' Powder Works at Augusta, Ga. These mills had a daily capacity of 17,000 pounds of powder and, at that time, were the largest mills of their type in the world. Colonel G. W. Rains, his commanding officer, writing of him said, "I recognized in my young lieutenant, Shaler Smith, the mind of a genius and to him I entrusted the development of my ideas, which he worked out with skill, taste and proportion, characteristic of skill as an architect and engineer." Upon the close of the war he married Mary Gordon Gairdner, of Augusta, Ga.

In 1866 Mr. Smith organized, with Charles H. Latrobe and his father, Benjamin H. Latrobe, the engineering firm of Smith, Latrobe and Company which, in 1869, became the Baltimore Bridge Company, with Mr. Smith as President and Chief Engineer.

Again the call of the open road, this time, to the banks of the Mississippi where, in St. Charles and St. Louis he spent the remainder

of his life. He died in 1886, at the age of fifty, survived by his wife and six daughters.

During these last twenty years of his life he left the impress of his engineering genius in many far corners of the world; bridges in Australia; the Verrugas Viaduct in the Andes of Peru and the Hanging Bridge over the Royal Gorge of the Arkansas River on the Denver and Rio Grande Western Railway. In this bridge he met one of those engineering problems that always appealed to him. Through this Gorge, with precipitous walls about three thousand feet high the Arkansas River flows in a rocky channel, so narrow and swift as to preclude the possibility of building a support in the channel for the outer girder. The inner girder is carried by the rocky ledge and the outer girder, suspended from struts extending from wall to wall of the canyon.

He became a member of the American Society of Civil Engineers in 1873 and was a director in 1877-78. The memorial pamphlet published by this society a year after his death contains the following in reference to him; "Among his contributions to engineering knowledge may be noted the use of iron trestle work, which he was the first to employ on any large scale, by building, in 1868 and '69 on the L. C. & L. Railroad and the Elizabethtown & Paducah Railroad, nine structures of this class ranging from fifty to one hundred and thirty-five feet in height.

"But his most important professional work was without doubt the practical demonstration of the uses and value of the cantilever, in the employment of which he was, in this country at least, the pioneer. His first use of the cantilever as a means of dispensing with false-work was in 1869, when he erected in this manner a three hundred foot draw span over Salt River, on the line of the Elizabethtown & Paducah Railroad. His next work of this kind was the Kentucky River bridge on the Cincinnati Southern Railroad.

"This crossing was located by the railway engineers at a point where, over twenty years before, Mr. John A. Roebling had built the towers for a suspension bridge, and where the canyon through which the river runs is twelve hundred (1200) feet wide and two hundred and seventy-five (275) feet deep. The river here is subject to freshets which average one every two months, with a maximum range of fifty five feet and a known rise of forty feet in a single night. . . . The design for a cantilever structure submitted by Shaler Smith seemed to be the best solution of the problem and the contract was awarded to him.

. . . . The trusses were commenced by anchoring them back to the towers built by Roebling and were then built out as cantilevers from each bluff to a distance of one half the length of the side span and at this point rested upon temporary wooden supports. From thence they were again extended as cantilevers until the side spans were completed and rested upon the iron piers.

"This structure is remarkable for the boldness of its design and the faith of its engineer in his ability to plan and execute a work for which he had no precedent and no guarantee of success except the correctness of his calculations. Mr. Smith staked his professional reputation on his design and undertook the execution of the work at his own pecuniary risk. His success is a brilliant illustration of the exact science

of the profession, and demonstrates the completeness of his own mastery of its principles.

"Mr. Smith's last great work was the bridge just completed over the St. Lawrence River for the Canadian Pacific Railway, a short distance above the Lachine Rapids. In this bridge the conditions of the location led him again to apply the cantilever principle, but upon a design entirely novel. This is a deck bridge except over the main channel, where a high or through bridge was required to permit the passage of steamers. The depth and strength of the current at this point is such, as in the judgment of the engineers, to preclude the use of scaffolding.

"Mr. Smith provided for the clear headway of sixty feet for steamers and the erection, without scaffolding, over the deepest water by what he denominated "flying cantilever spans" arranged as follows: A distance of one thousand, three hundred and fifty five feet over the main channel is crossed by two deck flanking spans and two central cantilever through spans of four hundred and eight feet each. The change from deck to through spans is made by curving the top and bottom cords of the cantilever spans upward from the flanking spans and the bottom cords upward from the central pier. In erecting, the cantilever spans were to be built out each way from the flanking spans and from the central pier without the use of scaffolding. When connection is made in the centers of the cantilever spans the joints are to be riveted up so that they will act as cantilevers for dead loads and as continuous girders for live loads. The cantilever spans are fixed at the central pier and the contraction is taken up at the further ends of the flanking spans. Vertical adjustments are provided for at the ends of the flanking spans to release any abnormal strain which may be caused by the settlement of the piers.

"For several years previous to this time (1885), Mr. Smith had been Consulting Engineer for the Canadian Pacific Railway, the St. Louis Bridge Company and several large Western railway systems. As Consulting Engineer for the Canadian Pacific Railway he had charge of the construction and laying off of a section of the railroad west of Winnipeg.

"During the preparation of the plans for, and the execution of, the work of the Lachine bridge, Mr. Smith was an invalid confined to his room and suffering extreme bodily pain. But his strong will mastered his physical suffering and he kept himself informed of the progress of his work and held the direction of it until the very end of his life. This structure is one of the greatest works of its kind and is a worthy ending of a professional career of exceptional brilliancy." The bridge, commenced in March 1886, was completed July 1887, but many months before that time the spirit of Charles Shaler Smith had crossed his last bridge—Bifrost—and had passed into the Halls of Valhalla.

BIBLIOGRAPHY:

American Society of Civil Engineers, Memoir of Charles Shaler Smith, M. Am. Soc. C. E.—Died December 19th, 1886.

"The American Railway," published by Charles Scribner Sons, 1889, see pages 16, 34, 55.

Personal letters and newspaper articles.

Additional Notes on the Early Locomotives in Nova Scotia

By ROBERT R. BROWN.

EDITOR'S NOTE: The Society is indebted to Mr. Robert R. Brown, our Canadian Representative and Secretary of the Canadian Railroad Historical Association, for procuring from the Canadian Pacific Railway the two pictures of the Lachine Bridge.

The view showing the bridge under construction in December 1886 is of great interest. In the foreground will be noted a policeman, pipe in mouth, rifle in hand, doubtless to maintain order among the Indians. The building directly behind the completed portion of the bridge is a convent, built on the exact site of La Salle's house. The original village of Lachine, or, to give it its correct name—Fort Remi—surrounded the house. After the town was destroyed by the Iroquois in 1687 the town was moved to a new site about one mile farther west. This old site is not now in the city of Lachine but is in the town of Ville La Salle. The old house near the right hand border is a real old-timer and dates back to about 1780. The oldest existing building on the island of Montreal stands near this bridge but is not in the picture.

The picture showing the bridge completed, the raised portion in the middle was to let the steamboats pass through to run the Lachine Rapids. Last year, from what can be learned, the summer of 1932, not a single boat ran the Lachine Rapids, the first time this has happened in over ninety years.

The north abutment of the bridge stands about 100 feet from the site of La Salle's home, where he lived before setting out to discover the mouth of the Mississippi River. The name "Lachine" (China) was given the town as sort of a joke because La Salle was forever talking about a route to China.

In this connection the Editor wishes to state and to express his heartiest wishes for the success of the recently formed Canadian Society. Three of our members, Messrs. Loyer, Spriggs and Brown are its President, Vice President and Secretary, respectively. The headquarters are in the Chateau de Ramezay where not only will a cordial greeting await any of our members who visit this museum but considerable of interest will be found there. During the past years it has been a great pleasure to work with all of our Canadian members individually and we are sure that the same relations will exist with the formation of this new Society.

LN Bulletin No. 7 appeared an article by Mr. C. Warren Anderson on the early locomotives of the Albion Mines Railway in Nova Scotia and as two of these old locomotives have since been returned to their old home through the courtesy and generosity of the Baltimore and Ohio Railroad certain details, hitherto more or less unknown, have come to light regarding them. It was well known that the locomotives "Samson" and "Albion" had been exhibited at Chicago in 1893 but their subsequent whereabouts was a mystery until they turned up at the Fair of the Iron Horse at Halethorpe in 1927. The Provincial Government then approached the Baltimore and Ohio with the object of having the two old engines returned to the province where they had been in service so long and to this the railway readily agreed, so on June 21st, 1928 the two engines were presented, with appropriate ceremonies, to the Province of Nova Scotia.

The old horse operated tramway at the Albion Mine originally built in 1818 and rebuilt in 1829 was soon found to be inadequate, so in 1834 or thereabouts the General Mining Association determined to extend the line to the Loading Ground at Abercrombie and rebuild the existing portion, between the Albion Mine and the town of New Glasgow, so that locomotives, or steam carriages as they called them, could be used. The surveys were made by Peter Crerar, a local school master, and the Directors in England were so pleased with his work that they refused to send out an engineer to construct the line as they felt that Mr. Crerar was quite capable of supervising the work. If one can judge by the present condition of the line it must have been, for many years, the best built railway in America; the bridges and culverts were built of stone and many of them are still in use. The country through which the railway ran is very uneven but the line was remarkably straight and level and there was only one grade of any consequence. The earliest rails were of the fish belly pattern set in metal chairs spiked to ties placed three feet apart; the later ones were bull head rails of a rather unusual type.

The first three locomotives were the "Samson", the "Hercules", and the "John Buddle" all built by Timothy Hackworth at New Shildon, England, during the summer of 1838 and were placed on the rails at Abercrombie in December of that year. They were exactly alike and were characteristic Hackworths; resembling the "Royal George" of the Stockton and Darlington Railway. The boilers were about 13'x4' and had the Hackworth return flue; they were fired from the front and the fireman rode in a tender pushed in front of the engine. The engines had no frames; the axle bearings were bolted to sheet iron brackets riveted to the under sides of the boilers. The cylinders, 15 $\frac{3}{4}$ "x16", were mounted vertically at the rear end and the piston rods were connected directly to the rear pair of drivers; Watt's parallel motion being used instead of the usual cross heads and slide bars. The valve gear was a four eccentric gab motion also working vertically. Springs were fitted to the middle and forward axles only and the wheels, six in number, were 48" and of the Hackworth plate type. Spring balance safety valve and pressure gauge and three try cocks completed the equipment. They were a very antiquated type and could travel only about ten miles an hour but they served their purpose and remained in service until about 1884; old engineers claim that of all the locomotives on the line the three old Hackworths were the best hill climbers and were the least troublesome.

Ten years later, in 1848, another locomotive, the "Vulcan", appeared on the line; it was built by R. B. Longridge & Co., at Bedlington, England. The only picture of it that has turned up is a crude drawing made by a man who was formerly its driver. Apparently it was a Stephenson long boiler type, so popular in England at that time, and had a "gothic" haystack fire box. It was a 2-4-0 engine; had outside horizontal cylinders, 15"x24", and 60" drivers. The leading wheels and the four wheels of the tender were 36".

Next, in 1854 came two locomotives, the "Albion" and the "Pictou", built by Rayne and Burn at Newcastle-upon-Tyne, England.

They were about the same size as the older Hackworths but there the resemblance ends. They had multi-tubular boilers; a wood and wrought iron "sandwich" type frame; Stephenson's link valve motion; and inclined cylinders, about 15"x24", connected to the middle pair of drivers.

When the "Albion" was exhibited at Chicago in 1893 a small sign was placed nearby stating that the engine was built by Hackworth at the Soho Works in 1839, but, clearly, that was an error as the "Albion" is quite unlike anything Hackworth ever built. He limited his engines to a few similar types which differed in almost every respect from the locomotives turned out by his rival, Stephenson. On examining the "Albion", as it is to-day, one is immediately struck by the fact that it has all the characteristics of a Stephenson and therefore could hardly have been built by Hackworth. Then one cannot ignore the fact that on the side of the frame there is a cast iron plate, 12" long and 6" high, bearing the following inscription: "Rayne and Burn—Engineers—Newcastle upon Tyne—1854". Originally there was a plate on each side of the engine but one has been removed. Then the old engineers all insist that Rayne and Burn were the builders; in fact it seems that Rayne and Burn had some connection with the General Mining Association and supplied other machinery for the mines.

The next locomotive was the "John Bridge", built 1872, at the Lowka Engine Works, Whithaven, England by Fletcher, Jennings & Co. It was a 0-4-2 side tank engine and was the first on the line without a tender. It had horizontal cylinders, 15"x23", and 66" drivers and was found to be so unsuitable for hauling coal in a hilly country that it was sent to the Association's railway at Sydney Mines where it is said to have ended its career by running off the end of the wharf.

The last of the old timers on the Albion Mines Railway was the "Sir George Elliot", built in 1880 by Black and Hawthorne at Gateshead, England. It was a 0-6-0 saddle tank with horizontal cylinders, 15"x24", 48" drivers and was the first engine on the line to have a cab.

About 1890 a new pier was built at Pictou Landing and most of the old railway was abandoned. The traffic was then handled by Intercolonial, and later by Canadian National, locomotives and the Acadia Coal Co., present owners of the mines, now have but two locomotives working around the mines: a small six wheel shunter and a small four wheel saddle tank.

LOCOMOTIVES USED BY THE GENERAL MINING ASSOCIATION IN NOVA SCOTIA

Albion Mines Railway, Pictou County

1838	Samson	15 $\frac{3}{4}$ x16	0-6-0	48"	Hackworth
1838	Hercules	15 $\frac{3}{4}$ x16	0-6-0	48"	Hackworth
1838	John Buddle	15 $\frac{3}{4}$ x16	0-6-0	48"	Hackworth
1848	Vulcan	15x24	2-4-0	60"	Longridge
1854	Albion	15x24	0-6-0	48"	Rayne and Burn
1854	Pictou	15x24	0-6-0	48"	Rayne and Burn
1872	John Bridge	15x23	0-4-2	66"	Lowka Works
1880	Sir George Elliot	15x24	0-6-0	48"	Black and Hawthorne



The "Samson" and "Albion" of the Albion Mines Ry. now at Halifax, N. S.

Courtesy Canadian National Rys.

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Sydney Mines Railway, Cape Breton

? Halifax	12x20	0-6-0	60"	?
? Sidney	12x20	0-6-0	60"	?
1868 Stephenson		0-4-0		?
1872 John Bridge	15x23	0-4-2	66"	Lowka Works
1885 C. G. Swan	14x23	0-6-0	58"	Sydney Mines
1894 J. D. Hill		4-4-0		Baldwin

Three of these locomotives are still in existence; the "Samson" and the "Albion" are now in the Canadian National Station at Halifax, and the "J. D. Hill" is now running on the Maritime Coal, Railway and Power Co.'s. line between Maccan and Joggins, N. S.

Information obtained, principally, from old engineers.

THE KUHLER LITHOGRAPHS.

In BULLETIN No. 29 we called the attention of our members to the work of another artist—Mr. O. Kuhler. The Schwartz Galleries, 507 Madison Ave., New York, N. Y., recently published a set of five locomotive litographs in colors. The set includes the "De Witt Clinton", "Stevens Crampton Engine", "Winans' Camels", the "Pioneer" on the Cumberland Valley and the "General" of Civil War fame on the Western & Atlantic Ry. The series is technically correct and handsomely printed. The price of the set is \$48.00, a discount of 10% is allowed to our members. Orders should be addressed to the Schwartz Galleries as noted above.

TRAVEL

The railroad track is miles away,
And the day is loud with voices speaking,
Yet there isn't a train goes by all day
But I hear its whistle shrieking.

All night there isn't a train goes by
Though the night is still for sleep and dreaming,
But I see its cinders red on the sky,
And hear its engine steaming.

My heart is warm with the friends I make,
And better friends I'll not be knowing,
Yet there isn't a train I wouldn't take,
No matter where it's going.

—Edna St. Vincent Millay.

The Chicago & Grand Trunk Railway

REMINISCENCES OF AN APPRENTICE, PERIOD 1884-1898.

By W. G. LARMOUR

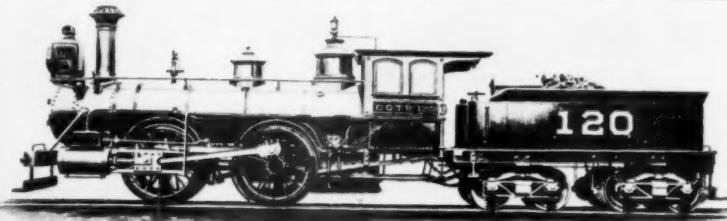
SI HE Grand Trunk Lines west of the St. Clair River comprised of the Chicago & Grand Trunk Main line from Port Huron, Mich. to Chicago; the Detroit, Grand Haven & Milwaukee from Detroit to Grand Haven, Mich., connecting with the Grand Haven & Milwaukee Transportation Company, operating the steamers "WISCONSIN" and "CITY OF MILWAUKEE" to Milwaukee; the Chicago, Detroit & Canada Grand Trunk Junction Railway from Port Huron to Detroit; the Michigan Air Line from Richmond to Jackson, Mich., the Toledo, Saginaw & Muskegon Ry. from Durand to Muskegon, Mich., and the Cincinnati, Saginaw & Mackinaw Ry. from Durand to Bay City, Mich., a total of about 840 miles of railway.

These lines were operated under the same English Directorate as the Grand Trunk Railway of Canada, but by separate management, the officers being, as follows:—W. J. Speer, General Manager, George B. Reeve, Genl. Traffic Manager, A. B. Atwater, Genl. Superintendent, Herbert Roberts, Mechanical Supt., J. A. Slack, Asst. Mech'l. Supt., and W. Wanless, Master Car Builder.

The main locomotive and car shops were located at Fort Gratiot, Mich. just north of Port Huron, with secondary shops at Detroit, Battle Creek and Elsdon near Chicago. In addition to repairs, new locomotives, passenger and freight cars were built at the Fort Gratiot shops, and the locomotives had the distinction of performing 50 to 100% longer road service than contract-built engines of the same class.

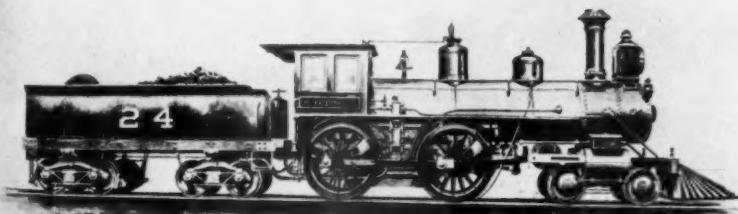
The roster of locomotives follows:—

Numbers	Type	Builders	Date	
1 to 25	4-4-0	Hinkley Loco. Wks.	1883	
26 " 32	Class A	Fort Gratiot Shops	1887-89	
33 " 53	2-6-0	Rhode Island & Schn'tdy	1882	
54 " 66 (Called "Jumbo")	4-4-0	Rhode Island 73" Drivers	1882	
67 " 96	Frt. & Pass.	Baldwin 62 & 69" Drivers	1880	
98	Vauclain compound	Fort Gratiot Shops	1892	
99	Richmond compound	Fort Gratiot Shops	1893	
100 to 102, & 104 to 109	4-4-0	Grant Loco. Wks.	1878	
103	4-4-0	Fort Gratiot Shops	1896	
110 to 122 (#111 scrapped—92)	4-4-0	Mason Loco. Wks.	1879	
111	Switcher	0-6-0	Fort Gratiot Shops	1892
123 to 124	Class A	Fort Gratiot Shops	1890	
125 " 140	Class A	Brooks Loco. Wks.	1891	
141 " 152	Class A	Rogers Loco. Wks.	1892	
154 " 165	Class B	Cooke Loco. Wks.	1893	
153		Baldwin Loco. Wks.	1885	
902 to 909	2-6-0	Schenectady Loco. Wks.	1896	
992 " 999	4-6-0	Baldwin Loco. Wks.	1896	
598 " 602	St. Clair Tunnel	0-10-0	Baldwin Loco. Wks.	1890



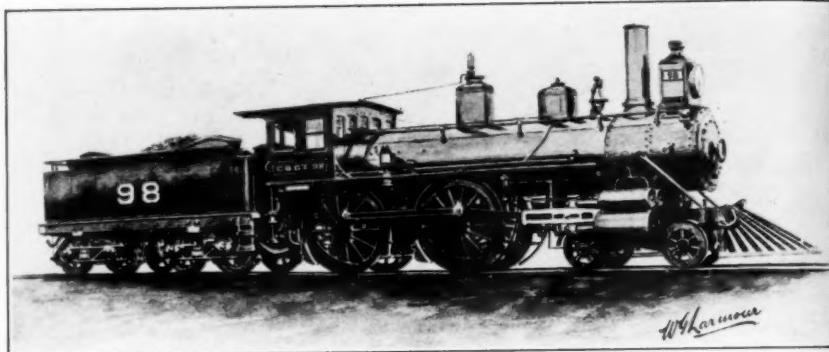
MASON

C. & G. T. R. #120—Mason, 1879

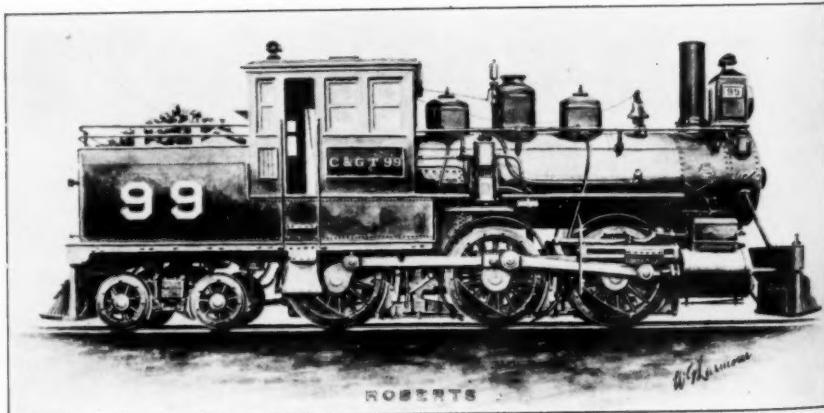


HINKLEY

C. & G. T. R. #24—Hinkley, 1883



C. & G. T. R. #98—Ft. Gratiot Shops, 1892



C. & G. T. R. #99—Ft. Gratiot Shops, 1893

The D. G. H. & M. engines were numbered from 200 to 224.

*223 was a Class A engine built at Fort Gratiot in 1894.

*224 a 4-4-0 type was built at Detroit about 1886.

Information regarding the balance is not at hand.

The C. D. & C. G. T. Jet. Ry. and the Michigan Air Line engines follow:—

471 to 481	2-6-0	Rhode Island Loco. Wks.	1882
482 " 489	4-4-0	Mason Loco. Wks.	1875
490 " 493	4-4-0	Portland Co. Loco. Wks.	1872
494 " 496 Class A	4-4-0	Fort Gratiot Shops	1894
497 " 499	4-4-0	Baldwin Loco. Wks.	1873

The accompanying illustrations of a few of these engines, are from sepia wash drawings by the writer, which the reader may kindly accept as authentic, also the view of the St. Clair River between Point Edward, Ont., and Fort Gratiot, Mich.

Engine No. 120 is typical of ten, 4-4-0 Mason freight engines with 17x22" cylinders, converted to 0-4-0 switchers at Fort Gratiot Shops in 1884. The majority of these switchers were sent to the Chicago Stock Yards, under their own steam. They were put under slow orders on account of the teetering tendency due to the wheel arrangement. No. 120 got as far as Spring Lake, just east of Lansing, where the railway skirts the south end of the Lake for about a quarter of a mile. This stretch of track was laid in boggy ground, and, in spite of piling and tons of ballast dumped there, was none too firm. All trains had slow orders over that particular spot and No. 120 was not running as fast as she could, but still too fast, all conditions considered. At any rate, she jumped the track and went into the bog. The crew dropped off without injury but before they could get word to a telegraph operator, about a mile and half further on, No. 120 had entirely disappeared and has not reappeared since.

Engine No. 24. This was one of the Hinkleys, 18x24" cylinders, 62" drivers, converted to a passenger engine with 69" drivers at Fort Gratiot in 1884. This lot of engines were built to design of Mr. H. Roberts, Mech. Supt. and were similar to his Class "A" engines, except that they had shorter boilers and square fire-boxes between bar frames, with the driving springs overhung, while the Class "A" engines had a longer and wider fire-box with sloping grates carried between slab frames, and the driving springs were underhung. These engines carried 160 pounds working pressure.

Engine No. 98. Class "A" passenger engine with 69" drivers, built at Fort Gratiot Shops with "Vauclain" compound cylinders, furnished by the Baldwin Locomotive Works. There were 13 of this class built at Fort Gratiot with 18x24" simple cylinders, and No. 98 only as a compound. About one-half of this lot were freight engines with 62" drivers. No. 98 came out in 1892. These engines were highly successful in service.

Engine No. 99. Built to design by Mr. H. Roberts and Mr. F. B. Joy, Chief Draftsman, at the Fort Gratiot Shops in 1893 for suburban service at Chicago. It was a "cross" compound, with cylinders furnished by the Richmond Locomotive Works, Richmond, Va., the illustration showing the low pressure side. One of her jobs was the handling of a daily funeral train out of Chicago to the large cemeteries on the C. & G. T. line, to the south of the city. It was the only "cross" compound on the road.

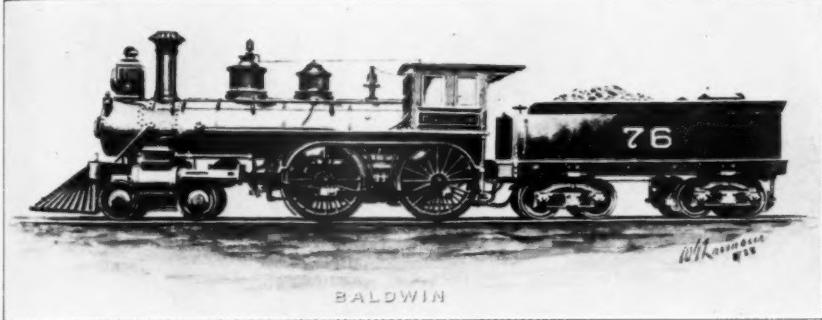
Engine No. 76. Baldwin passenger engine, cylinders 17x24", drivers 69", used in the service between Detroit and Port Huron. This engine ran a five car, Sunday special from Fort Gratiot to Detroit, carrying home a large party of guests of the Detroit Dry Dock Company, who had come up from Detroit on the ice crushing car-ferry "SAINTE MARIE" on her maiden voyage to her service in the straits of

Mackinac. The trip up the River occupied all day and the people were tired, but No. 76 "high-balled" them home, running the 61 miles in 60 minutes flat. The passengers were pleased to the extent of taking up a generous offering in a hat which was handed to the engine crew at the Brush Street Depot.

Engine No. 103. This engine was built at the Fort Gratiot Shops in 1896, and was the last one turned out new from these shops. The cylinders were 18x24", drivers 63", boiler pressure 180 pounds, designed by Mr. H. Roberts for scheduled fast freight service, and she gave a good account of herself on the road. Just prior to the completion of this engine, Mr. Charles M. Hays became General Manager of the G. T. R. and Mr. Frank W. Morse, Supt. of Motive Power. Mr. Robert Patterson, then General Foreman at Stratford, Ont., was soon appointed to the General Foremanship at Fort Gratiot, vice Mr. Samuel Hayward, resigned, and later became Master Mechanic of the Lines West of the St. Clair Tunnel, displacing Mr. H. Roberts. No. 103 felt the change, as will be noted in the aluminum numbers, lettering, and the panel striping on the tender, also the horizontally slatted pilot, as compared with the vertical slatting in the other engines illustrated. The writer had the "pleasure" of riding No. 103 for two months while testing several grades of coal. The run was between Port Huron and Battle Creek, and our train from Battle Creek invariably consisted of 40 refrigerators (reefers) of boxed meat from Chicago, and No. 103 could make them dance. One bright morning, while making up some lost time down Davison Hill, east of Flint, we found the main line blocked at Davison (no flag out) by a local freight engine and one box car, the balance of their train occupying the full capacity of the siding. Engineer Alf Eads sung out to the fireman and myself to "pick out a soft spot to land on" and squealed for hand brakes. We had an 8" air pump and only 25% of the train was air-braked, but on looking back over the train, we were rejoiced to behold a burly tramp on top of every car, to the rear of the 25%, twisting brake wheels for dear life, and thanks to them, for their "rising" to the occasion surely averted a bad mess. We passed the local engine and car at about 25 miles per hour, as they backed against us into a blind switch to a grist mill, and it was impossible to see daylight between our pilot beam and theirs, as we came abreast. They sent the box car over the pile of dirt at the end of the siding, and we ran through the open main line switch, which they did not have time to close, breaking the switch rod and closing the point, but it was up to the local crew to bully the section gang into making repairs, and "say nothing about it". Ours was a popular train for tramps, and tramps were popular with us after that day's close call. Nobody jumped, for there were no "soft spots."

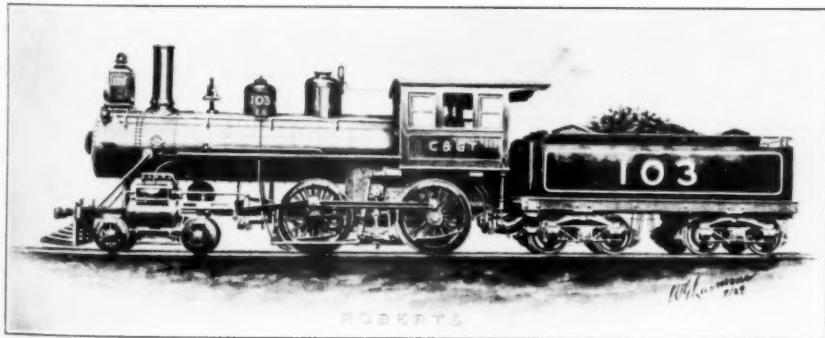
Engine No. 155. This passenger engine, and eleven others like it was built by the Cooke Locomotive & Machine Works, Paterson, N. J., in 1893 to designs by Mr. H. Roberts. The cylinders were 18x24", drivers 73", boiler pressure 180 pounds. The grate area was large, the fire-box extending entirely through the cab and full width on top of frames. The tank legs tapered to a width of only 10" at the forward end, thus providing a large stowage of coal near the fire door. These engines were used in the Chicago Fair traffic and gave excellent service. No. 155 figured in a fatal collision in the Nichols Yard at Battle Creek in October 1893. The C. & G. T. had been very fortunate up to that time, being a single track road and running passenger trains in as many as six sections. One of these fine engines also hauled the eastbound night train which was murderously derailed on a heavy down-grade, west of Battle Creek, by strikers of Debs American Railway Union, about two weeks after the strike collapsed in 1894, and after the track walkers had been taken off. The rails had been lifted, turned out and spiked in place and the whole train plunged down a steep embankment into a gulley, with the loss of over thirty lives. The murderers were all apprehended, but the cases dragged through the Michigan courts for so long a time, that the final outcome is unknown to the writer.

Engine No. 598. This engine, with four others like it, was delivered in 1891 for service in the St. Clair Tunnel, between Sarnia, Ont., and Port Huron, Mich. The cylinders were 22x28", driving wheels 44", boiler pressure 180 pounds, fuel, anthracite coal, weight in working order 100 tons, said to have been the heaviest locomotive turned out by the builders, the Baldwin Locomotive Works, up to that time. They were designed to handle the regular freight and passenger trains on the 2% grades



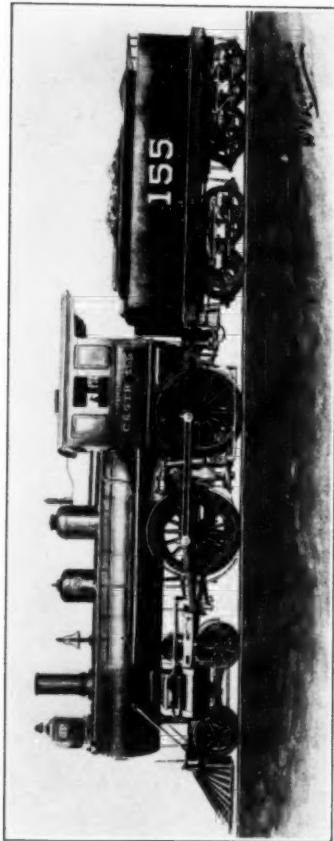
BALDWIN

C. & G. T. R. #76—Baldwin, 1880

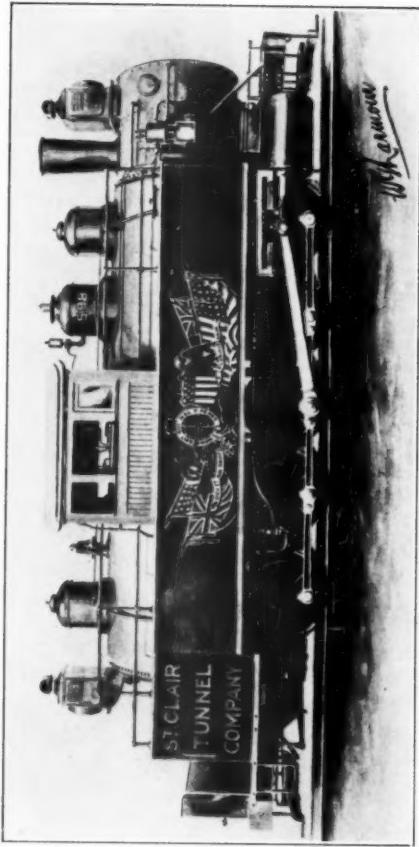


ROBERTS

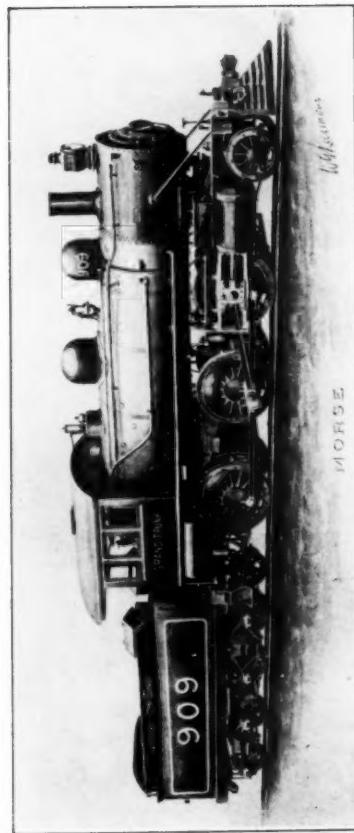
C. & G. T. R. #103—Ft. Gratiot Shops, 1896



C. & G. T. R. #155—Cooke, 1895



St. Clair Tunnel Co. #598—Baldwin, 1891



G. T. R. #909—Schenectady, 1896

in the tunnel approaches, and for this work, they proved themselves to be well able. They continued in the Tunnel service until displaced by electric power in 1912, when they had their side tanks and coal bunkers removed, regular tenders attached, and were then relegated to switching service at different points. No. 598 was used at the opening celebration of the Tunnel in 1891, hence the adornment of the Internationally mixed Coat of Arms, seen on the side tank.

Engine No. 909. This engine was built by the Schenectady Locomotive Works in 1896, to designs by Mr. Frank W. Morse, Supt. of Motive Power. The cylinders were 20x26", driving wheels 62", boiler pressure 200#, weight in working order 152800 pounds. It was one of an order of eight delivered at the same time. Also eight 4-6-0 passenger engines of similar general design, with 69" drivers, were delivered by the Baldwin Locomotive Works in the same year. These engines marked the advent of heavier power on the Grand Trunk Lines on both sides of the St. Clair River.

Engine No. 702. A Rhode Island engine, cylinders 17x24", drivers 68", built about 1880 and typical of those used in passenger service on the Southern Division (formerly Great Western Ry.) on the Canadian side. These were splendid little engines and it was surprising how they could handle heavy trains on fast schedules. They were painted red with the wheels a chocolate color, and were always clean, bright and hot, when on the job.

In 1891 the Fontaine Crossing Company of Detroit built four continuous rail crossings, designed and patented by Mr. Eugene Fontaine who was also the patentee of the Fontaine Friction Drive Locomotive, which was built in 1881 by the Grant Locomotive Works and tried out on the Canada Southern Railway, between Windsor and St. Thomas, Ont.

These crossings were installed at the point where the Pittsburgh, Fort Wayne & Chicago R. R. crossed the Chicago & Grand Trunk, near Chicago, both roads being double tracked at that point.

The crossings had heavy I-beam foundations with solid wrought iron turn-tables at all rail intersections. These turn-tables had a 10½" section of special hardened steel, dove-tailed in the top of each, to form the rail, and were connected with levers and locking devices below which operated to give the railway, having the right of way, a continuous rail over the crossing. The whole installation was connected up with the interlocking and signal system and operated from the tower.

The installation was made on a Sunday, and as the new crossings had been on the ground for some time previous, the train men on both roads were greatly interested, and knew all about what was to be expected from the crossings, in the way of smooth passage at high speed, and were keen to try them out.

Each road had a large section gang, in addition to the Fontaine crew, and they worked feverishly through the day to have the crossings ready for the passage of a fast P. Ft. W. & C. train, due about 6:00 P. M. They finished in the nick of time and the signals were given for the train, which had kept her appointment, being sharp on schedule.

The crowd stepped back in the clear, and then—HORRORS—someone discovered that the crossing was set for the C. & G. T., the crossing operating levers and the signal connections were evidently mixed. But it was too late, nothing could be done, for the train was right upon them, and thundering over the crossing, had disappeared in a cloud of dust on the other side before anyone could catch a full breath, or get their hearts ticking again. The expected awful smash had not happened and the train was safely on her way.

What saved a wreck was the fact that the crossings were only about one degree off a right angle, to all appearances were perfectly square, and many a silent prayer of thankfulness went upwards from the assemblage on that account, for every wheel in that train had to jump eight open spaces, about 4" wide each, and every flange had to lift its height over four rails.

Later that evening, when the Fontaine people got in touch with the engineer of the train, and inquired about how he liked the new crossing, he replied enthusiastically, "FINE AS SILK, RODE LIKE A CRADLE". Moral: All's well that ends well.

In the early days of the period dealt with in this article, there was keen rivalry between the Michigan Central and Grand Trunk for the business of handling Squires' hogs from Chicago east.

If any of my readers have ever had the experience of being stalled on a passenger train, on a hot day, between two trains of double-deck hog cars, he will remember the distinguishing affluvia, but this business was profitable to the railways.

Mr. Squires was one of the largest shippers of hogs in Chicago and, being something of a sport, he made a sporting proposition to the two rival roads arranging to give each a train of 20 cars, at the same time at the Stock Yards, with the stipulation,—"The fellow who gets his train to Buffalo first, gets my business".

After giving the journal boxes a thorough inspection and oiling, the C. & G. T. ran their train as a second section of No. 3, the best passenger train they had out of Chicago, for anybody who caused delay to No. 3, without a good alibi, might just as well hunt for another job, and those hogs had a fast ride to Buffalo.

They beat the M. C. time about (we will forget the number of hours). I have friends on the M. C. and will refrain from rubbing it in.

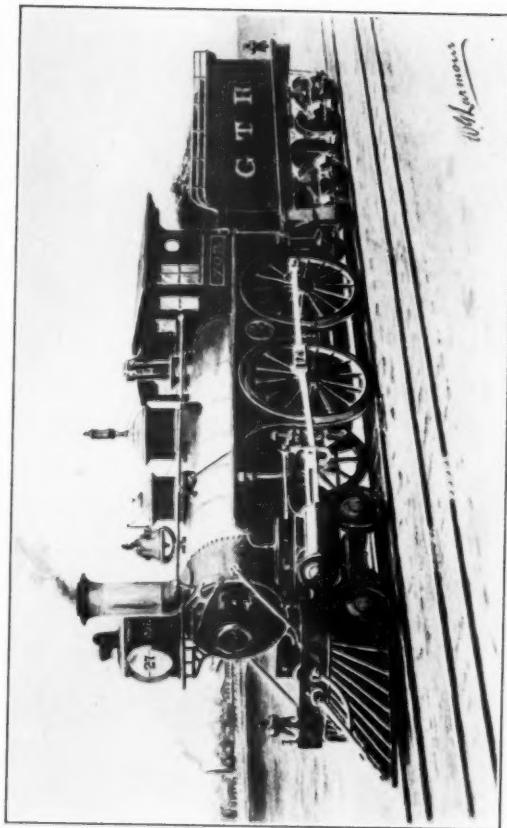
Before the opening of the St. Clair Tunnel in 1891, the G. T. R. maintained a car-ferry service between Point Edward, Ont. and Fort Gratiot, Mich., with two twin-screw steamers "INTERNATIONAL" and "HURON" and the ice-breaking tug "M. F. MERRICK" to assist the ferries in the winter seasons.

The St. Clair River was very narrow and deep at this crossing, and the current ran from 7 to 8 miles per hour, depending on wind conditions. The boats described a letter S course in crossing, the current forcing their bows down stream, when leaving the slips and the helm then being put hard over, the boats head was brought up stream, just in time to enter the slip on the opposite side.

At this time the Grand Trunk was operating a fast train, known as the "Erie Limited", in connection with the Erie R. R. at Niagara Falls, between New York and Chicago.

The time for making the Ferry crossing, from the time the train arrived at one terminal until it left the other, was twelve minutes. We believe that this stands as a record for fast handling, even in this day of hustle.

When the train reached either terminal, the engine was not uncoupled, but immediately backed the train onto the waiting boat. The



G. T. R. #702—Rhode Island about 1860

W.H. Allen 1860

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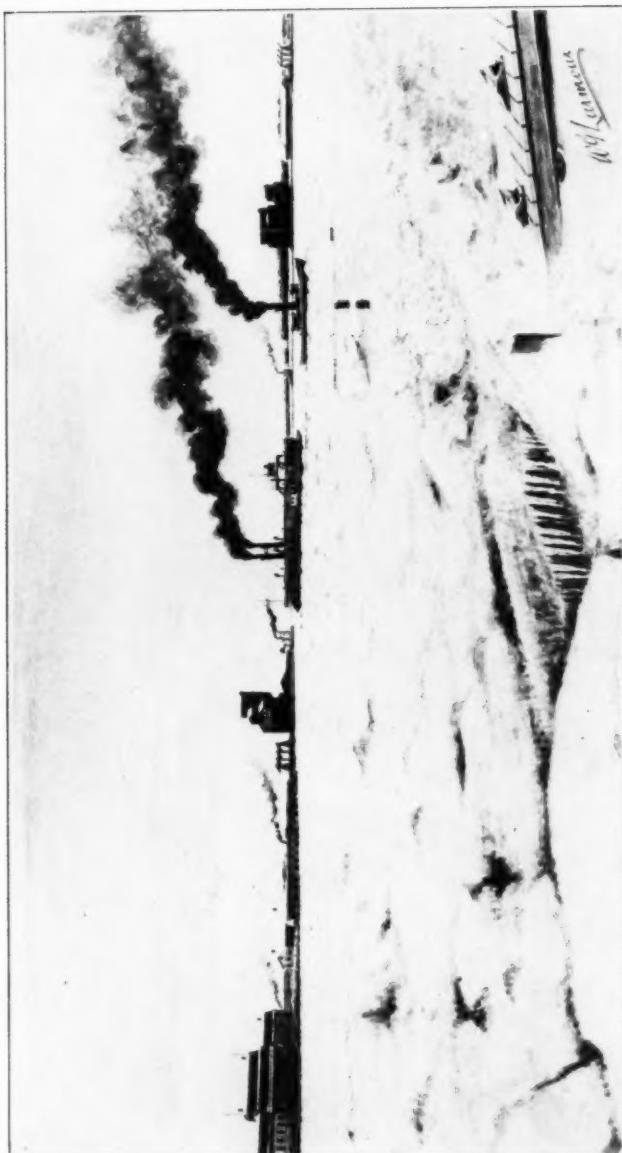
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The River in Winter

passenger engine on the opposite side was waiting at the ferry slip, with the train crew, and pulled the train off the boat, starting on the run at once. Customs hand-baggage inspection was made while crossing the river, heavy baggage was in bond.

This performance was occasionally interrupted in the winter when ice from Lake Huron was running in the river, but with southerly winds, the lake and river were always open.

During the season of lake navigation, delays of a few minutes occasionally occurred, due to heavy traffic up and down the River.

Engine #702 is typical of the engines used on this train, on the Canadian side, and #98 is of the type used on the American side.

The sketch of the river illustrates conditions in the winter season. Looking south, the car-ferry "HURON" is seen being assisted to the American side, through the heavy running ice, by the tug "M. F. MERRICK". The old Point Edward Depot is seen on the extreme left, with the grain elevator and freight sheds further down the river.

All of these old landmarks have long since disappeared, with perhaps the exception of the faithful Fort Gratiot Light, which still continues to sweep the horizon with its welcome ray, or to waken the babies with its deep fog-horn blast, in thick weather, to guide the big modern freighters into the St. Clair Entrance, as it did the smaller wooden vessels of the years gone by.

WANTS OF OUR MEMBERS.

Some of our members would like to procure the following books:

- "Story of the Erie", Mott.
- "A Century of Progress, Delaware & Hudson".
- "The Locomotive Engine and Philadelphia's Share in its Early Development", Jos. Harrison.
- "History of the Pennsylvania R. R.", Wm. E. Sipes.
- "Motive Power and Development on the Pennsylvania R. R.", Paul T. Warner.
- "The Railways of America" (?)
- "One Hundred Years of American Railroading", John W. Starr.
- "When Railroads were New", Charles Frederick Carter.
- "Railroads, their Origin and Problems", Adams.
- "The First Railroad in South Carolina", Maher.
- "Economic History of the Baltimore & Ohio Rd.", Reigenstein.
- "The Railroad Era—The First Five Years of its Development", Horatio Allen.
- "The Life of John Ericsson", Church.
- "Twentieth Century Locomotives", Angus Sinclair.
- "The Catechism of the Locomotive", third edition, revised by G. B. Fowler, published in two volumes in 1912.

Any of our members who can help locate copies of the above, will they please quote the price to the Editor.

We are again calling the attention of those members who are interested in photographs of railroad stations, to a collection of negatives of stations in New Jersey which are for sale by one of our members. Any one interested is asked to get in touch with your Editor.

Brief Sojourns

By ANN ARBOR.

THE Grand Rapids & Indiana R. R., running due north and south on the west side of this state was always of interest to me.

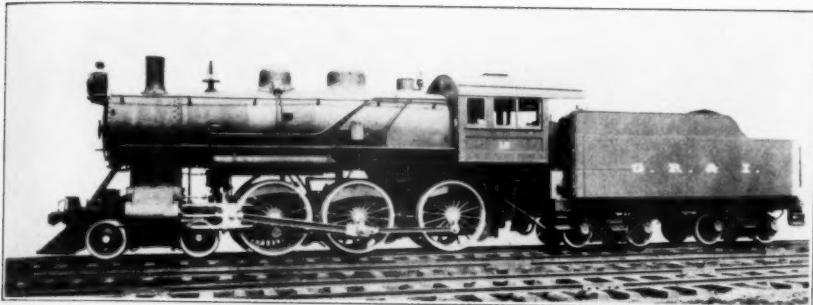
The road was originally built to tap the vast timber wealth of the State of Michigan which gave rise to the growth of the city of Grand Rapids. However, in my day the big timber had all gone but the furniture factories were busy places.

Grand Rapids was the head quarters of the "G. R. & I." as it was familiarly called. The shops were located at that point and the motive power, prior to the control of the Pennsylvania System was of interest. The heaviest freight engines were of the 2-8-0 type and came from the Pittsburgh plant of the American Locomotive Co. There were also some 4-6-0 engines from the same plant that were used in passenger service and numerous little 4-4-0 engines from various builders. The power was always well maintained and kept scrupulously clean.

At the time of which I write, Mackinaw City and Northern Michigan had come into their own as a summer resort and immense numbers of people, especially those affected by Hay Fever, spent their summers in that delightful section of the state. The G. R. & I. had a train known as the "Resort Special" serving Chicago and Mackinaw City. The train left Chicago at 5:50 P. M. via the Michigan Central R. R. and they delivered it to the G. R. & I. at Kalamazoo, Mich., at 9:20 P. M. The train was due at Mackinaw City at 7:10 A. M. Through sleepers were carried from Chicago to Harbor Springs and Mackinaw City and coaches as well, a chair car was carried from Chicago to Grand Rapids and diners were carried Chicago to Grand Rapids and Cadillac to Mackinaw City. At Chicago a connection was made with the Illinois Central for a sleeper leaving St. Louis at 8:57 A. M. In 1907 a sleeper was carried from Detroit to Harbor Springs, the Michigan Central delivering the sleeper to the G. R. & I. at Kalamazoo.

The consist of the southbound train was much the same; through sleepers were carried from Mackinaw City and Harbor Springs to Chicago, a sleeper was added at Grand Rapids for Chicago, a coach was carried from Mackinaw City to Chicago and the Mackinaw City-St. Louis sleeper was also carried. Dining cars were run between Mackinaw City and Cadillac, the early morning arrival in Chicago precluded the necessity of one on the west end. The train left Mackinaw City at 4:30 P. M. and was delivered by the G. R. & I. to the Michigan Central at 2:40 A. M. The train arrived in Chicago at 7:03 A. M. and the Illinois Central landed their sleeper at St. Louis at 5:45 P. M. This train ran for years under numbers 17 and 18 and may run yet, for aught I know.

The St. Louis sleeper over the Illinois Central R. R. was always an interesting proposition to me as the old Vandalia ran sleepers via Richmond. In fact the G. R. & I. at that time and still operates during the summer months a through train from points on the Pennsylvania System



G. R. & I. #12 Pittsburgh, 1907

Courtesy of American Locomotive Co.



G. R. & I. #1 on the "Resort Special"

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A Norris Locomotive in Japan

to Mackinaw City. At the time I mention, this train had equipment from such points as St. Louis, Indianapolis, Cincinnati and Cleveland for Mackinaw City.

The Pere Marquette made better time between Detroit and Harbor Springs and that service via the G. R. & I. was withdrawn around 1910. Also the Pere Marquette operated a fast train from Chicago to Grand Rapids and Harbor Springs which caused the G. R. & I. to keep their service of the best. A short time ago I came across a picture of the "Resort Special" which your Editor has promised to reproduce with this article. It brings back pleasant recollections when the vacationist reached his summer resort via the railroad and shows the train as I remember seeing it many a time on the old "G. R. & I."

(EDITOR'S NOTE: Through the kindness of the American Locomotive Co., the following information relative to the two locomotives illustrated may be of interest. G. R. & I. #1 was one of five engines, Nos. 1-5 incl. built at the Pittsburgh Locomotive Works in 1909 with 20x26" cylinders, 68" drivers, 210# steam pressure and a weight of engine of 172400 lbs. The #12, reproduced here through the kindness of the American Locomotive Co., was one of four engines, Nos. 10, 11, 12 and 101, built by the Pittsburgh Locomotive Works in 1907 with 20x26" cylinders, 68" drivers, 200# steam pressure and the engine weighed 169800 lbs.)

A Norris Locomotive In Japan?

AT THE request of the United States National Museum, Smithsonian Institution, Washington, D. C., we are reproducing a photograph of a Japanese drawing of a Norris locomotive and train of 1853. This drawing was recently presented to the above museum.

The legend has been translated—"Presented in the second month of the seventh year of Kaei"—which would correspond to our March, 1854. This suggests that the drawing is a copy of a drawing which might very reasonably have been included in the material which Commodore Perry took with him to acquaint the Japanese with the culture of the United States when he returned to Japan in 1854 for the answer to President Fillmore's proposal for the opening of relations between the two countries. Locomotives and railroads were very prominent characteristics of our mode of living in 1854 and could be depended upon to impress the Japanese with the mechanical progress of western nations.

The date of the Japanese drawing is not known. The legend is inaccurate in that there were only six years of the year name "Kaei" which, in turn, suggests that the drawing was made long enough after the year 1854 that the artist could have made the mistake, but near enough to that year that he trusted his memory and did not refer to a calendar book.

The badge plate which the artist reproduced is of no little interest. In C. H. Caruthers' article—"The Norris Locomotive works"—Bulletin No. 10, the writer states he had knowledge of only one locomotive or drawing of a locomotive, the badge plate of which was inscribed simply—"Norris Works".

The drawing is in water color on thin paper flecked with mica. The locomotive boiler and stack are a deep purple, the tender is a brick red with green trim and the car is in two shades of brown. All wheels are a dark red. The drawing is approximately 40 inches in length. It would be interesting to know if any of our members are familiar with a drawing from which this might have been copied also to check up on the veracity of the report that Commodore Perry took with him to Japan a model of a locomotive and train from which this drawing might have been made.

A NEW BOOK.

"Canadian Railway Development—From the Earliest Times," by Norman Thompson and Major J. H. Edgar, B. Sc., A. M. E. I. C., V. D. Published by The Macmillan Company of Canada, Limited, St. Martin's House, Toronto, Ontario, Canada, 1933. One Volume, 402 pages, 5 $\frac{3}{8}$ x 7 $\frac{3}{4}$. Price \$4.00, postage 15¢ extra.

Those of our members who are interested in the history and development of the early railroads, especially those of Canada, will welcome the appearance of this book. The authors have taken great pains with the beginning and development of the early railways of Canada. The first chapter is devoted to "Early Planning and Construction"; then follows chapters on the Great Western Railway, the Grand Trunk Railway, the Intercolonial Railway; three chapters are devoted to the Canadian Pacific Railway; a chapter to the Canadian Northern Railway, the Grand Trunk Pacific and the National Transcontinental Railways, Miscellaneous Dominion Railways, United States Railways Operating in Canada and finally the Canadian National Railways. In the back of the volume is placed a table arranged chronologically of the principal events and at the end of each chapter will be found a similar table. The authors relate their history in an easy fashion and the book is far from dry and uninteresting. It is not a mere recital of roads and opening dates but stories and a recital of events lift one over the dry places and keep the interest of the reader to the concluding chapter.

We are proud of the fact that both authors are members of this Society, Mr. Thompson being our Canadian Representative in Western Canada. Both men have seen railroad service in the scenes they have so well portrayed. The book is extremely timely on account of the coming centenary of the first railway opened in Canada—the Champlain & St. Lawrence—which will be celebrated in 1936. We have here an interesting history of the development of the railroads of our neighbor, Canada, which is not only extremely interesting but valuable for reference. The stirring account of the building and completing of that huge enterprise across the vast wilderness and through the mountains cannot but impress one of the courage and ability displayed by William Van Horne and others. The book is a most welcome addition to the railway histories that have appeared in the last few years.

The Minneapolis & St. Louis Railroad Company

By O. H. MEANS

 THE Minneapolis & St. Louis Railroad operates in four states—Illinois, Iowa, Minnesota and South Dakota. Its mileage, 1627 miles, is the result of piecing together and assembling various small roads which have been in the course of development since the Civil War. Thus, the road, unlike many of the western roads, was not built from a finished plan but was the result of years of labor and investment on the part of various groups of promoters. It has also resulted in the development of the territory in the upper Mississippi Valley for this part of the country was very sparsely settled when the first track of the present Minneapolis & St. Louis R. R. was laid.

The present agitation of the Government owning and operating the railroads is not new. In 1837, the State of Illinois appropriated \$700,000.00 to build a railroad from Peoria, Illinois, to the Mississippi River. This was the first enterprise in railroad building which has any relationship to the present system. The grading of this line was started in 1837 but was abandoned in 1838. Some fifteen years later, 1851 or 1852, the Chicago, Burlington & Quincy R. R. graded a line from Peoria to Farmington, Illinois, and constructed terminal lines in Peoria. No rails, however, were laid on the Peoria to Farmington survey until several years later.

It was not until 1865, the reconstruction period following the Civil War, that any construction commenced. The discovery of coal in southern Iowa, caused the line from Eldora to Ackley to be completed in 1866. This line is now part of the present main line of the Minneapolis & St. Louis R. R. The line from Oskaloosa to Albia was completed the year previous—1865.

In 1869 a line joining the two previously constructed roads, from Eldora to Oskaloosa, was completed and at the same time the road was extended northwards from Ackley to within four miles of the Minnesota State line at Northwood. These lines, save for the Eldora to Ackley line, were built under the name of the Central Railroad of Iowa; afterwards changed to Iowa Central R. R. The Eldora to Ackley part of the present main line was originally the Eldora Railroad & Coal Co., and was purchased by the Central Railroad of Iowa in 1869.

Commencing at White Bear, Minnesota and continuing through St. Paul and Minneapolis to Merriam Jct., these original tracks of the Minneapolis & St. Louis R. R. were built in 1870. Operated by this company until 1901, in that year the line from White Bear to Minneapolis was sold to the Northern Pacific Railroad and the Minneapolis & St. Louis trains operated between the Twin Cities use this track leased from the Northern Pacific R. R.

The Iowa lines of the Minneapolis & St. Louis R. R. started under the name of the Des Moines & Ft. Dodge R. R. This road was built in either 1869 or 1870 connecting Des Moines with Fort Dodge. In 1875 a

branch line was built from State Center connecting with the main line of the Iowa Central at Newburg and from Grinnell to Montezuma. This was constructed under the name of the Grinnell & Montezuma R. R. and was sold to the Iowa Central R. R. in 1882.

In the year following, 1876, a narrow gauge railroad known as the Ft. Dodge & Ft. Rigley Railroad & Telegraph Company built a line from Fort Dodge to Humboldt. The next year, 1877, the line which had been built as far as Merriam Jet., in the original construction of the Minneapolis & St. Louis R. R., was extended to Albert Lea and the line was further extended to connect with the Iowa Central R. R. at Northwood. This part of the line is known as the Joint Track. In 1895 it was leased to the Burlington, Cedar Rapids & Northern R. R., afterwards absorbed by the Chicago, Rock Island & Pacific R. R. A part of this track seems a bit in doubt but it would appear that the four miles between Northwood and the Minnesota State Line was rebuilt by the Burlington, Cedar Rapids & Northern R. R., and the leased track extends from Albert Lea to the State Line. The lease was made for a period of 99 years.

In 1878, connection was made between the Iowa and Minnesota lines south from Albert Lea, connecting with the narrow gauge line at Humboldt. This enterprise was known, at least during the construction period, as the Ft. Dodge & Ft. Rigley R. R. The year following, 1879, the line in Illinois was extended from Farmington to the Mississippi River.

In 1880, a line commencing at Newton, Iowa via New Sharon, Oskaloosa and Brighton to Oakville, Iowa, known as the Chicago, Burlington & Pacific R. R. was built. Connection was made with the Illinois line by means of a ferry across the Mississippi River. In 1882 the road was sold to the Iowa Central R. R.

In 1881 a line was built from Ft. Dodge to Angus, making two lines between these points; the original line having been built from Des Moines to Fort Dodge in 1870. The same year, 1881, the present Western Division was started from Hopkins to Morton, a part of the original Minneapolis & St. Louis R. R. In 1881 and 1882 the line from Fort Dodge to Ruthven was built. I assume this line was built by the Chicago, Rock Island & Pacific R. R., as the Minneapolis & St. Louis R. R. did not assume operation until 1905, under lease, and in 1915 the line was purchased from the Chicago, Rock Island & Pacific R. R.

In 1882 the branch line from Hampton to Belmond was built. In the same year the Story City Branch, beginning at Minerva Jet., four miles west of Marshalltown and extending in a northwesterly direction to Story City, was built. For many years the operation of this branch was one of the most profitable pieces of property owned by the Iowa Central R. R. Conditions have changed and this branch is no longer the best paying part of the Eastern Division.

The same year, 1882, that portion built by the Chicago, Burlington & Pacific R. R., from Newton to the Mississippi River, was abandoned between Oskaloosa and the River. A new survey was made and the line built to connect with the old location at Oskaloosa, which is the present track between Oskaloosa and Keithsburg. The bridge at Keithsburg was opened for traffic on February 26, 1886 and the Keithsburg Bridge Co., 2.75 miles, was leased to the Central Railroad of Iowa in 1886. The present bridge was constructed in 1909.

In 1883, the terminal tracks of the Minneapolis & St. Louis R. R. in Minneapolis were leased to the Railway Transfer Company of Minneapolis. This was a new corporation although the stockholders and a part of the officers at least, are the same as the parent company. In the same year, a line was built under the name of the Wisconsin, Minnesota & Pacific R. R., from Faribault to Mankato, Minn. This road crossed the Minneapolis & St. Louis R. R. at Waterville and was operated by the latter company until 1899 when it was sold to the Chicago Great Western R. R. The following year, 1884, the Wisconsin, Minnesota & Pacific extended their line from Morton, Minn. to Watertown, S. D. In the same year, 1884, the Iowa Central R. R. secured control of the terminal tracks in the City of Peoria and operated these lines until 1895 when they were sold to the Chicago, Rock Island & Pacific R. R.

In 1895 the southwestern line was started connecting with the Western Division at Winthrop, Minnesota, and extended to New Ulm. This line was built under the name of the Minneapolis, New Ulm & Southwestern R. R. and upon completion was operated as a part of the Minneapolis & St. Louis R. R.

In 1898, immediately after the Spanish-American War, the branch line constructed between Hampton and Belmond was extended to Algona, Iowa, crossing the Albert Lea, Fort Dodge track at Corwith. This part of the line was known as the Iowa Central & Western Ry. and was operated as part of the Iowa Central Ry. under the separate name of Iowa Central & Western until sold to the Minneapolis & St. Louis R. R. in 1916. The same year the track from Albia westward was built to serve the Iowa Central Railroad Co.'s coal mine at Hocking, Iowa.

In 1899, the track originally built as far as New Ulm was extended across the Iowa line to Storm Lake and connection was made with the Fort Dodge to Ruthven line, 12 miles of track between Spencer and Ruthven being leased from the Chicago, Milwaukee & St. Paul Ry.

In 1905 the Western Division was extended to the Missouri River, the terminal being at LaBeau, S. D. A branch line was built northwards from Conde to Leola within a few miles of the North Dakota line. This extension was made under the name of the Minnesota, Dakota & Pacific R. R. and upon completion was operated under this name until it was absorbed by the Minneapolis & St. Louis R. R. in 1912.

In 1900 the Minneapolis & St. Louis R. R. secured control of the Iowa Central R. R., and in 1902 the offices of the latter company were moved from Marshalltown, Iowa to Minneapolis. In 1908, the Twin City Rapid Transit Co. was leased for 99 years. In 1905 or 1906, the Albia & Centerville R. R., connecting those two places in Iowa, was relinquished and is now known as the Iowa Southern Utilities Co. In 1925, the Interstate Commerce Commission permitted the Minneapolis & St. Louis R. R. to abandon 11 miles from Van Cleve to State Center, Iowa.

At the present time, through freight service is operated over the tracks of the Chicago, Rock Island & Pacific R. R. between Oskaloosa and Des Moines, thus giving a connection between the Eastern and Central Divisions without excessive mileage which would be required to move this tonnage via Hampton and Corwith to Fort Dodge. Thus concludes the story of a road that once had ambitions to reach the Pacific Coast.

MOTIVE POWER

Turning now to the motive power of the Minneapolis & St. Louis R. R., the following is a roster of their locomotives dated June 1, 1932. The classification letter denotes the wheel arrangement, the figures following denote the series and the last two figures denote the tractive effort in thousand pounds.

	A 0-4-0	F 2-6-0	K 4-6-2	
Nos.	B 0-6-0	G 4-6-0	M 2-8-2	
	D 4-4-0	H 2-8-0		
48- 49	B2-23	Baldwin	1897	18x26" 51" 95000
52	B1-21	Baldwin	1892	18x24" 51" 90650
53- 56	B2-27(1)	Baldwin	1898	19x24" 51" 117850
57- 58	B2-27(1)	Baldwin	1899	
59- 60	B2-27(2)	Baldwin	1906	19x24" 51" 117850
80- 89	B3-35	A. L. Co.	1916	21x28" 57" 172000
139-140	D6-16	Rhode Island	1892	18x24" 69" 108850
141-145	D7-17	Pittsburgh	1898	17x24" 63" 94540
146-147	D8-16(1)	Manchester	1881	17½x24" 63" 94000
148	D8-16(2)	Manchester	1881	17½x24" 67" 102000
149	D8-16(1)	Manchester	1881	
150-155	D8-16(2)	Manchester	1881	
156-157	D9-24	Schenectady	1906	19½x26" 69" 144500
61- 62	F2-22	Cooke	1893	19x24" 51" 110200
63- 64	F3-30	Baldwin	1908	20x26" 51" 144000
65- 66	F4-33	Baldwin	1911	20x26" 51" 162000
67- 69	F5-32	Baldwin	1909	20½x26" 51" 157000
300-305	F1-27	Schenectady	1902	20x26" 63" 142200
306-314	F1-28(1)	Schenectady	1899	20x26" 63" 141500
315-322	F1-28(2)	Schenectady	1906	20x26" 63" 150500
323-328	F1-28(1)	Schenectady	1899	
329-334	F2-33	Baldwin	1908	20x28" 57" 150000
200-203	G1-19	Pittsburgh	1891	18½x24" 55" 114300
204-207	G2-20	Pittsburgh	1898	17x26" 62" 121100
208-213	G2-20	Pittsburgh	1897	
214-217	G3-22	Schenectady	1901	18½x26" 69" 152000
218-221	G4-25	Pittsburgh	1892	19x24" 55" 114000
				51"
222-225	G5-25	Cooke	1900	19x26" 63" 142600
226-229	G6-24	Baldwin	1909	20x26" 67" 167000
230-235	G7-24	Baldwin	1900	19x26" 63" 153100
400-419	H2-38	Baldwin	1909	21x30" 59" 172000
440	H1-32(1)	Baldwin	1898	21x26" 55" 153100
441	H1-32(2)	Baldwin	1898	21x26" 55" 153100
442-447	H4-34	Schenectady	1902	21x26" 55" 166000
450-461	H5-39	Schenectady	1912	22x30" 59" 200000
462-481	H6-38	Baldwin	1910	21x30" 59" 200000
500-504	K1-32	Brooks	1921	22x28" 69" 225000
600-614	M1-46(1)	Schenectady	1915	24x30" 59" 259900
615-619	M1-46(2)	Brooks	1916	24x30" 59" 259900
620-634	M1-46(3)	Brooks	1921	24x30" 59" 259000
1- 4	Gas Electric	Passenger, Baggage and Mail		
25- 31	Gas Electric	Baggage and Mail		

Both roads, the Minneapolis & St. Louis and the Iowa Central, have at one time or another, done considerable renumbering and these changes are shown in the following list:

<i>M & St. L.</i>	<i>Builder</i>	<i>Date</i>	<i>Original No.</i>	<i>Changes</i>		
48	Baldwin	1897	Ia. C.	7	Ia. C.	53
49	Baldwin	1897	Ia. C.	8	Ia. C.	54
52	Baldwin	1892	M & St. L.	59		
53	Baldwin	1898	M & St. L.	73		
54	Baldwin	1898	M & St. L.	74		
55	Baldwin	1898	M & St. L.	75		
56	Baldwin	1898	M & St. L.	76		
57	Baldwin	1899	M & St. L.	77		
58	Baldwin	1899	M & St. L.	78		
59	Baldwin	1906	M & St. L.	50		
60	Baldwin	1906	M & St. L.	79		
61	Cooke	1893	Ia. C.	66	Ia. C.	398
62	Cooke	1893	Ia. C.	67	Ia. C.	399
63	Baldwin	1908	Ia. C.	10	Ia. C.	396
64	Baldwin	1908	Ia. C.	9	Ia. C.	397
65	Baldwin	1911	M & St. L.	395		
66	Baldwin	1911	M & St. L.	396		
67	Baldwin	1909	M & St. L.	302	M & St. L.	397
68	Baldwin	1909	M & St. L.	301	M & St. L.	398
69	Baldwin	1909	M & St. L.	300	M & St. L.	399
139	Rhode Island	1892	M & St. L.	55		
140	Rhode Island	1892	M & St. L.	68		
141	Pittsburgh	1898	M & St. L.	35		
142	Pittsburgh	1898	M & St. L.	36		
143	Pittsburgh	1898	M & St. L.	37		
144	Pittsburgh	1898	M & St. L.	38		
145	Pittsburgh	1898	M & St. L.	39		
146	Manchester	1881	Ia. C.	42	Ia. C.	116
147	Manchester	1881	Ia. C.	45	Ia. C.	117
148	Manchester	1881	Ia. C.	40	Ia. C.	118
149	Manchester	1881	Ia. C.	33	Ia. C.	119
150	Manchester	1881	Ia. C.	46	Ia. C.	120
151	Manchester	1881	Ia. C.	38	Ia. C.	121
152	Manchester	1881	Ia. C.	36	Ia. C.	122
153	Manchester	1887	Ia. C.	57	Ia. C.	123
154	Manchester	1881	Ia. C.	48	Ia. C.	124
155	Manchester	1881	Ia. C.	39	Ia. C.	125
					Rebuilt in 1909 with boiler built in 1901	
156	Schenectady	1906	M & St. L.	115	M & St. L.	146
157	Schenectady	1906	M & St. L.	116	M & St. L.	147
200	Pittsburgh	1891	Ia. C.	31	Ia. C.	200
201	Pittsburgh	1891	Ia. C.	32	Ia. C.	201
202	Pittsburgh	1891	Ia. C.	50	Ia. C.	202
203	Pittsburgh	1891	Ia. C.	52	Ia. C.	203
204	Pittsburgh	1898	Ia. C.	106	Ia. C.	214
205	Pittsburgh	1898	Ia. C.	107	Ia. C.	215
206	Pittsburgh	1898	Ia. C.	108	Ia. C.	216
207	Pittsburgh	1898	Ia. C.	109	Ia. C.	217
208	Pittsburgh	1897	Ia. C.	100	Ia. C.	208
209	Pittsburgh	1897	Ia. C.	101	Ia. C.	209
210	Pittsburgh	1897	Ia. C.	102	Ia. C.	210

<i>M & St. L. Builder</i>	<i>Date</i>	<i>Original No.</i>	<i>Changes</i>	<i>M & S</i>
211 Pittsburgh	1897	Ia. C.	103 Ia. C. 211	334
212 Pittsburgh	1897	Ia. C.	104 Ia. C. 212	400
213 Pittsburgh	1897	Ia. C.	105 Ia. C. 213	401
214 Schenectady	1900	M & St. L.	100 M & St. L. 125	402
215 Schenectady	1901	M & St. L.	101 M & St. L. 126	403
216 Schenectady	1901	M & St. L.	102 M & St. L. 127	404
217 Schenectady	1901	M & St. L.	103 M & St. L. 128	405
218 Pittsburgh	1892	Ia. C.	62 Ia. C. 204	406
219 Pittsburgh	1892	Ia. C.	63 Ia. C. 205	407
220 Pittsburgh	1892	Ia. C.	64 Ia. C. 206	408
221 Pittsburgh	1892	Ia. C.	65 Ia. C. 207	409
222 Cooke	1900	Ia. C.	72 Ia. C. 226	410
223 Cooke	1900	Ia. C.	73 Ia. C. 227	411
224 Cooke	1900	Ia. C.	70 Ia. C. 224	412
225 Cooke	1900	Ia. C.	71 Ia. C. 223	413
226 Baldwin	1909	M & St. L.	352 M & St. L. 206	414
227 Baldwin	1909	M & St. L.	353 M & St. L. 207	415
228 Baldwin	1909	M & St. L.	350 M & St. L. 204	416
229 Baldwin	1909	M & St. L.	351 M & St. L. 205	417
230 Baldwin	1900	Ia. C.	74 Ia. C. 218	418
231 Baldwin	1900	Ia. C.	75 Ia. C. 219	419
232 Baldwin	1900	Ia. C.	76 Ia. C. 220	420
233 Baldwin	1900	Ia. C.	77 Ia. C. 221	421
234 Baldwin	1900	Ia. C.	78 Ia. C. 222	422
235 Baldwin	1900	Ia. C.	79 Ia. C. 223	423
300 Schenectady	1902	Ia. C.	80 Ia. C. 300	442
301 Schenectady	1902	Ia. C.	81 Ia. C. 301	443
302 Schenectady	1902	Ia. C.	82 Ia. C. 302	444
303 Schenectady	1902	Ia. C.	83 Ia. C. 303	445
304 Schenectady	1902	Ia. C.	84 Ia. C. 304	446
305 Schenectady	1902	Ia. C.	85 Ia. C. 305	447
306 Schenectady	1899	M & St. L.	87	450
307 Schenectady	1899	M & St. L.	88	to
308 Schenectady	1899	M & St. L.	89	461
309 Schenectady	1899	M & St. L.	90	462
310 Schenectady	1899	M & St. L.	91	463
311 Schenectady	1899	M & St. L.	92	464
312 Schenectady	1899	M & St. L.	93	465
313 Schenectady	1899	M & St. L.	94	466
314 Schenectady	1899	M & St. L.	95	467
315 Schenectady	1906	M & St. L.	80	468
316 Schenectady	1906	M & St. L.	96	469
317 Schenectady	1906	M & St. L.	97	470
318 Schenectady	1906	M & St. L.	98	471
319 Schenectady	1906	M & St. L.	99	472
320 Schenectady	1906	M & St. L.	100	473
321 Schenectady	1906	M & St. L.	101	474
322 Schenectady	1906	M & St. L.	102	475
323 Schenectady	1899	M & St. L.	81 M & St. L. 300	476
324 Schenectady	1899	M & St. L.	82 M & St. L. 301	477
325 Schenectady	1899	M & St. L.	83 M & St. L. 302	478
326 Schenectady	1899	M & St. L.	84 M & St. L. 303	479
327 Schenectady	1899	M & St. L.	85 M & St. L. 304	480
328 Schenectady	1899	M & St. L.	86 M & St. L. 305	481
329 Baldwin	1908	Ia. C.	200 Ia. C. 306	500
330 Baldwin	1908	Ia. C.	201 Ia. C. 307	to
331 Baldwin	1908	Ia. C.	202 Ia. C. 308	309
332 Baldwin	1908	Ia. C.	203 Ia. C. 309	310
333 Baldwin	1908	Ia. C.	204 Ia. C. 310	311

<i>M & St. L. Builder</i>		<i>Date</i>	<i>Original No.</i>	<i>Changes</i>				
<i>#</i>				<i>Ia. C.</i>	<i>205</i>	<i>Ia. C.</i>	<i>311</i>	
334	Baldwin	1908	Ia. C.					
400	Baldwin	1909	M & St. L.	500				
401	Baldwin	1909	M & St. L.	501				
402	Baldwin	1909	M & St. L.	502				
403	Baldwin	1909	M & St. L.	503				
404	Baldwin	1909	M & St. L.	504				
405	Baldwin	1909	M & St. L.	505				
406	Baldwin	1909	M & St. L.	506				
408	Baldwin	1909	Ia. C.	225	Ia. C.	408		
409	Baldwin	1909	Ia. C.	226	Ia. C.	409		
410	Baldwin	1909	Ia. C.	227	Ia. C.	410		
411	Baldwin	1909	Ia. C.	228	Ia. C.	411		
412	Baldwin	1909	Ia. C.	229	Ia. C.	412		
413	Baldwin	1909	Ia. C.	230	Ia. C.	413		
414	Baldwin	1909	Ia. C.	231	Ia. C.	414		
415	Baldwin	1909	Ia. C.	232	Ia. C.	415		
416	Baldwin	1909	Ia. C.	233	Ia. C.	416		
417	Baldwin	1909	Ia. C.	234	Ia. C.	417		
418	Baldwin	1909	Ia. C.	235	Ia. C.	418		
419	Baldwin	1909	Ia. C.	236	Ia. C.	419		
440	Baldwin	1898	Ia. C.	80	Ia. C.	90	Ia. C.	400
441	Baldwin	1898	Ia. C.	81	Ia. C.	91	Ia. C.	401
					Simplified in 1911			
442	Schenectady	1902	Ia. C.	92	Ia. C.	402		
443	Schenectady	1902	Ia. C.	93	Ia. C.	403		
444	Schenectady	1902	Ia. C.	94	Ia. C.	404		
445	Schenectady	1902	Ia. C.	95	Ia. C.	405		
446	Schenectady	1902	Ia. C.	96	Ia. C.	406		
447	Schenectady	1902	Ia. C.	97	Ia. C.	407		
450				450				
to	Schenectady	1912	M & St. L.	to				
461				461				
462	Baldwin	1910	Ia. C.	420	M & St. L.	420		
463	Baldwin	1910	Ia. C.	421	M & St. L.	421		
464	Baldwin	1910	Ia. C.	422	M & St. L.	422		
465	Baldwin	1910	Ia. C.	423	M & St. L.	423		
466	Baldwin	1910	Ia. C.	424	M & St. L.	424		
467	Baldwin	1910	Ia. C.	425	M & St. L.	425		
468	Baldwin	1910	Ia. C.	426	M & St. L.	426		
469	Baldwin	1910	Ia. C.	427	M & St. L.	427		
470	Baldwin	1910	Ia. C.	428	M & St. L.	428		
471	Baldwin	1910	Ia. C.	429	M & St. L.	429		
472	Baldwin	1910	M & St. L.	410	M & St. L.	430		
473	Baldwin	1910	M & St. L.	411	M & St. L.	431		
474	Baldwin	1910	M & St. L.	412	M & St. L.	432		
475	Baldwin	1910	M & St. L.	413	M & St. L.	433		
476	Baldwin	1910	M & St. L.	414	M & St. L.	434		
477	Baldwin	1910	M & St. L.	415	M & St. L.	435		
478	Baldwin	1910	M & St. L.	416	M & St. L.	436		
479	Baldwin	1910	M & St. L.	417	M & St. L.	437		
480	Baldwin	1910	M & St. L.	418	M & St. L.	438		
481	Baldwin	1910	M & St. L.	419	M & St. L.	439		
500				500				
to	Brooks	1921	M & St. L.	to				
504				504				

<i>M & St. L. Builder</i>		<i>Date</i>	<i>Original No.</i>	<i>Changes</i>		
600 to 614	Schenectady	1915	M & St. L. to 614	600		
615 to 619	Brooks	1916	M & St. L. to 619	615		
620 to 634	Brooks	1921	M & St. L. to 634	620		
				634		

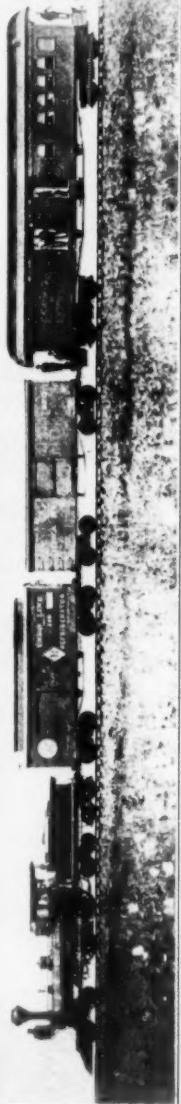
The author wishes to call the attention of the reader to a discrepancy that exists in the matter of M. & St. L. #153, formerly Ia. C. #57. Mr. F. W. Snyder, in the notes that follow, states this engine came from the Cooke Works. Later this engine was renumbered Ia. C. #131, later M. & St. L. #172. It is the opinion of the writer that #153 was originally #41 or #47. These are two of the engines listed in Mr. Snyder's letter numbered from 33-48 which are not accounted for in various lists and it is reasonable to assume that one became the #153 while the other probably became Ia. C. #115 and then M. & St. L. #167.

LOCOMOTIVES RETIRED FROM SERVICE PRIOR TO 1932.

2	A-1-13	M & St. L.	1886			
3	A-1-11	Manchester	1887	16x24"	51"	76980
4	A-1-11(2)	Manchester	1875	16x24"	51"	73000
45- 47	B-1-15	Cooke	1889	16x24"	50"	72000
50- 51	B-1-23	Baldwin	1892	18x24"	50"	?
100, 103	D-1-11	Baldwin	1877	16x24"	61"	75270
104	D-1-11	Baldwin	1877	16x24"	62"	75270
105-111	D-2-13	Baldwin	1880	17x24"	62"	75180
112	D-2-11	Baldwin	1880	17x24"	62"	75180
113-116	D-2-13	Baldwin	1880	17x24"	62"	75180
117-121	D-3-13	Manchester	1881	17x24"	63"	79280
122, 123						
125-133	D-4-13	Manchester	1882	17x24"	60"	77300
134-136						
138	D-5-13	C. R. I. & P.	1882	17x24"	64½"	77000
160-161	D-1-13	Mason	1880	17x24"	64"	84000
162-166	D-3-13(1)	Manchester	1881	17x24"	63"	86000
168-172	D-5-13(1)	Cooke	1887	17x24"	63"	84000
173-176	D-2-14	Baldwin	1890	17x24"	63"	88650
175					67"	

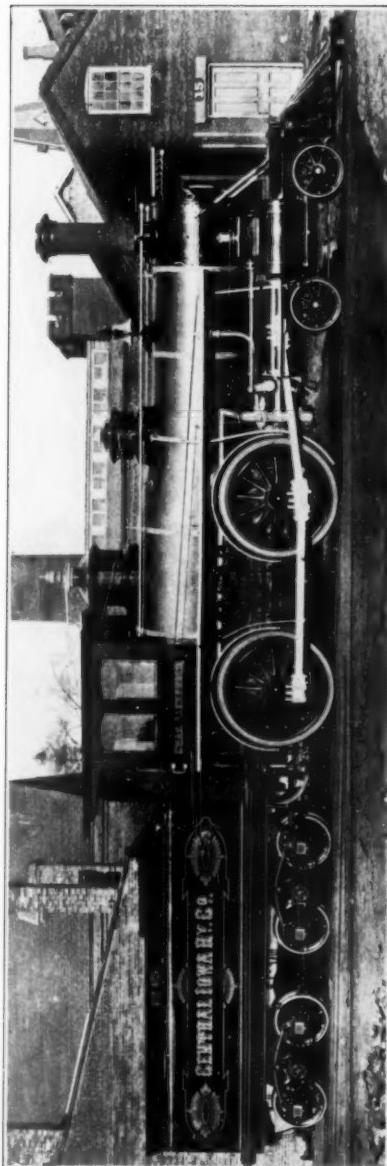
Changes in Numbers.

<i>M & St. L. Builder</i>		<i>Date</i>	<i>Original No.</i>	<i>Changes</i>		
2	M & St. L.	1886	M & St. L.	58		
3	Manchester	1887	M & St. L.	57		
4	Manchester	1875	Ia. C.	49		
					Saddle Tank 1911	
45	Cooke	1889	Ia. C.	59	Ia. C.	4,
46	Cooke	1889	Ia. C.	60	Ia. C.	5,
47	Cooke	1889	Ia. C.	61	Ia. C.	6,
50	Baldwin	1892	M & St. L.	15	Ia. C.	52



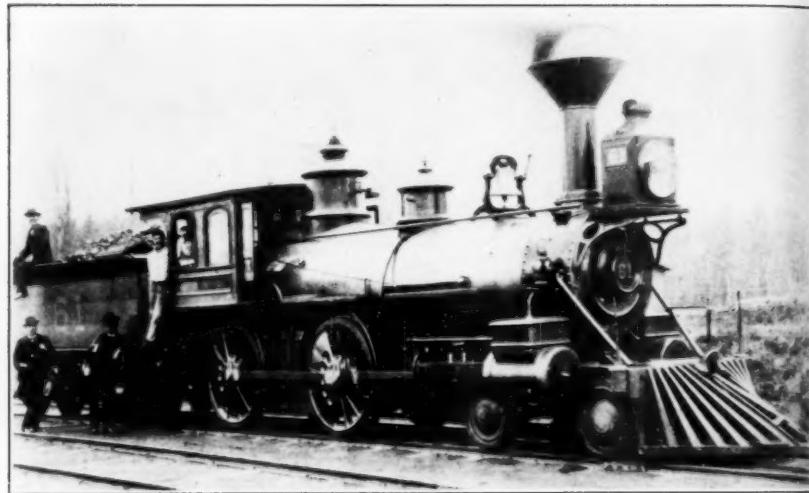
Ia. Central #1. Photo taken 1886 on Belmond Branch 12 miles west of Hampton, Ia.

Courtesy A. W. Johnson

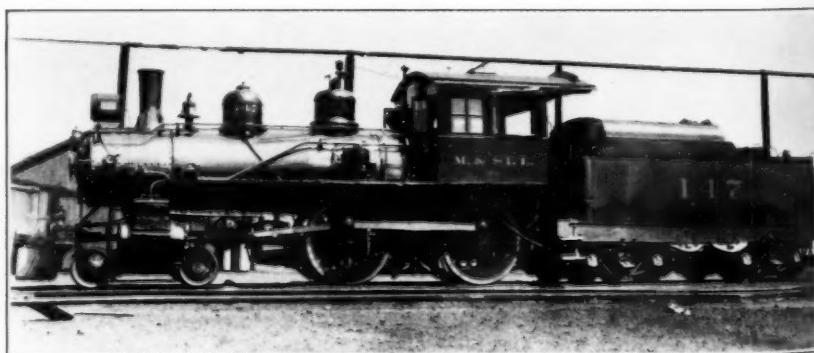


Central Iowa Ry. "Chas. Alexander"—Mason, 1880

Courtesy Herbert Fisher



Minneapolis & St. Louis R. R. #61—Manchester, 1881



Ia. Central #45, now M. & St. L. #147—Manchester, 1881

<i>M & St. L. Builder</i>	<i>Date</i>	<i>Original No.</i>	<i>Changes</i>
51 Baldwin	1892	M & St. L.	33
100 Baldwin	1877	M & St. L.	4
103 Baldwin	1877	M & St. L.	7
104 Baldwin	1877	M & St. L.	12
105 Baldwin	1880	M & St. L.	19
106 Baldwin	1880	M & St. L.	20
107 Baldwin	1880	M & St. L.	21
108 Baldwin	1880	M & St. L.	22
109 Baldwin	1880	M & St. L.	24
110 Baldwin	1880	M & St. L.	25
111 Baldwin	1880	M & St. L.	26
112 Baldwin	1880	M & St. L.	27
113 Baldwin	1880	M & St. L.	28
114 Baldwin	1880	M & St. L.	29
115 Baldwin	1880	M & St. L.	30
116 Baldwin	1880	M & St. L.	31
117 Manchester	1881	M & St. L.	45
118 Manchester	1881	M & St. L.	46
119 Manchester	1881	M & St. L.	47
120 Manchester	1881	M & St. L.	48
121 Manchester	1881	M & St. L.	49
122 Manchester	1882	M & St. L.	60
123 Manchester	1882	M & St. L.	61
124 Manchester	1882	M & St. L.	62
125 Manchester	1882	M & St. L.	63
126 Manchester	1882	M & St. L.	64
127 Manchester	1882	M & St. L.	65
128 Manchester	1882	M & St. L.	66
129 Manchester	1882	M & St. L.	67
130 Manchester	1882	M & St. L.	69
131 Manchester	1882	M & St. L.	70
132 Manchester	1882	M & St. L.	71
133 Manchester	1882	M & St. L.	72
134 C. R. I. & P.	1882	M & St. L.	210
135 C. R. I. & P.	1882	M & St. L.	211
136 C. R. I. & P.	1882	M & St. L.	212
137 C. R. I. & P.	1882	M & St. L.	213
138 C. R. I. & P.	1882	M & St. L.	214
160 Mason	1890	Ia. C.	26
161 Mason	1890	Ia. C.	25
162 Manchester	1881	Ia. C.	35
163 Manchester	1881	Ia. C.	37
164 Manchester	1881	Ia. C.	34
165 Manchester	1881	Ia. C.	43
166 Manchester	1881	Ia. C.	44
168 Cooke	1887	Ia. C.	53
169 Cooke	1887	Ia. C.	54
170 Cooke	1887	Ia. C.	55
171 Cooke	1887	Ia. C.	56
172 Cooke	1887	Ia. C.	57
173 Baldwin	1890	Ia. C.	28
174 Baldwin	1890	Ia. C.	29
175 Baldwin	1890	Ia. C.	30
176 Baldwin	1890	Ia. C.	27
			Ia. C. 104
			Ia. C. 103
			Ia. C. 110
			Ia. C. 111
			Ia. C. 109
			Ia. C. 113
			Ia. C. 114
			Ia. C. 127
			Ia. C. 128
			Ia. C. 129
			Ia. C. 130
			Ia. C. 131
			Ia. C. 105
			Ia. C. 106
			Ia. C. 107
			Ia. C. 108

IOWA CENTRAL RAILROAD LOCOMOTIVES.

The following notes were transmitted to C. B. Rogers, M. M. of the M. & St. L. R. R. at Marshalltown from F. W. Snyder. They form an interesting commentary to the early engines of this road.

#1	Thomas Kensett	McKay & Aldus	?	14x22"
2	H. P. Liscomb	Hinkley	1868	16x24"
3	Horace Abbott	Hinkley	?	15x22"
4	W. B. Shattuck	Hinkley	1861	15x22"
5	John S. Gilman	Hinkley	?	15x22"
6	W. H. Severs	Hinkley	?	15x22"
7	F. H. Sheffield	Hinkley	?	15x22"
8	A. L. Hatch	Hinkley	?	15x22"
9	R. A. Babbage	Hinkley	?	15x22"
10	J. M. Cate	Manchester	?	16x22"
11	G. M. Woodbury	Manchester	?	16x22"
12	C. C. Gilman	Mason	1871	16x24"
13	Volunteer	Manchester	?	16x24"
14	Advance	Manchester	?	16x24"
15	P. V. Rogers	Manchester	?	16x24"
16	J. C. Hoadley	Manchester	?	16x24"
17	J. J. Donaldson	Mason	1871	16x24"
18	W. H. Wheelock	Mason	1871	16x24"
19	George Bliss (West)	Mason	1871	16x24"
20	H. W. Eastman	Mason	1873	17x24" Ten wheel engine
21	D. N. Pickering	Mason	1873	17x24" Ten wheel engine
22	Amos Russell	Mason	1873	17x24"
23	No Name	Taunton	1878	17x24"
24	No Name	Taunton	1878	17x24"
25	Russell Sage	Mason	1880	17x24"
26	Charles Alexander	Mason	1880	17x24"
27	Giles E. Taintor	Mason	1881	17x24"
28	H. J. Boardman	Mason	1881	17x24"
29	George T. M. Davis	Mason	1881	17x24"
30	Peter Starr	Mason	1881	17x24"
31	No Name	Mason	1881	17x24"
32	No Name	Mason	1881	17x24"
33	Ashurst	Manchester	?	17x24"
34	Latrobe	Manchester	?	17x24"
35	John C. Bullitt	Manchester	?	17x24"
36	Henry F. Spaulding	Manchester	?	17x24"

(Construction dates have been added by the Editor)

The No. 1 was the only one built by McKay & Aldus. It had no offset in the side sheets or boiler head, had copper firebox and copper flues, 44" driving wheel centers and 3" tires.

The No. 2 was the only Hinkley of that size with 54" centers, 3" tires, 16x24" cylinders.

The Nos. 3, 4 & 6 had 54" centers and 3" tires. Nos. 5, 7, 8 and 9 had 46" centers and 3" tires. Other than this they were all the same.

The Nos. 10 and 11 had 54" centers and 3" tires. All of these engines carried 130 lbs. boiler pressure and when new, had two boiler feed pumps and no injectors.

The Nos. 15 and 16 were 16x24" Manchester, called "Blood engines," on account of Aretus Blood, Agent of the Manchester Works. They had wagon top boilers and all had 54" centers and 3" tires.

The Nos. 12, 17, 18, 19 & 20 were all alike, 16x24" Mason engines, straight boiler. These five and Nos. 15 and 16 had two boiler feed pumps and no injector.

The Nos. 13 and 14 were of a later date, 46" centers and 3" tires. They each had an injector on the left side that would work when the engine was standing. About this time all engines were equipped with this type of an injector which would work when standing but which would not work when the engine was in motion on account of the pump.

The Nos. 21 and 22 were ten-wheel Mason engines. They carried 140 lbs. boiler pressure, had 42" centers and 3" tires. About 1880 they were cut down at the Marshalltown Shops and made standard, 4-4-0 type engines. Mr. M. C. Wheeler was Master Mechanic at the time, John Player was Shop Foreman and Sam Moses, Boiler Foreman. At that time what is now the machine shop housed the entire mechanical department except the blacksmith shop and roundhouse. Power for the shop came from a stationary boiler standing about where the south pit now is and had the engine on its back.

The Nos. 23 and 24 were 17x24" Taunton, called Tweed engines. They did not have boiler enough for the size cylinder.

The Nos. 25 and 26 were 17x24" Mason engines and at that time were the heaviest on the line. They had straight stacks and a front end full of fire brick. These lasted about three months. The stacks were removed, the firebrick discarded together with the long nozzle and a short double nozzle petticoat pipe and diamond stack replaced them.

The Nos. 27, 28, 29, 30, 31 and 32 were all Mason bogie engines; engine and tender mounted on the same frame. The boiler sat on a center casting over the middle pair of drivers. The tank truck had three pairs of wheels patterned after a Pullman truck. The front end rested on the neck of the cylinder saddle. There was a sliding joint between the saddle neck and the exhaust nozzle casting that was fastened to the bottom of the smoke box. This slide had a range of 6" each way and was kept lubricated as was the center casting under the boiler. Nos. 27 and 28 came from the builder with three pairs of driving wheels under the boiler, while Nos. 29, 30, 31 and 32 had a pony truck in front of the cylinders. Later a pony truck was put under Nos. 27 and 28. These engines carried 160 lbs pressure and were supposed to pull 25 loads of coal over the hills but it was found they could not do it. In order to get results the steam pressure was increased to 200 lbs but it was found the boilers would not stand this pressure. Then 18" cylinders were ordered for all of these engines and applied save to No. 32. Steam pressure was reduced on all engines save the No. 32, to 160 lbs. The #32 was carrying 172 lbs. and the engineer claimed with the 12 lbs. additional pressure he was carrying the same load as the engines with 18" cylinders. This went along for some time and the 18" cylinders were never applied to the No. 32. One day, early in October, 1883, the #32 was going south with 44 empty coal cars on train #14; E. Bosley, Engineer; Charles Choate, Fireman; George Johnson, Head Brakeman and Win Gregory, Conductor, all on the engine at the time. About 1½ miles south of Lacey, the boiler exploded, breaking in two at the throat sheet. The engine and boiler ran to the north point of the curve at South Skunk and derailed

clearing the track. The firebox and tender stopped in the cut where the explosion occurred and the 44 empty coal cars piled up in a heap. Engineer Bosley was killed and buried in the wreckage, Fireman Choat was crippled for life, Brakeman Johnson died of his injuries and Conductor Gregory was only slightly injured. It was claimed by many, and I think justly, that most of the hauling strain on these bogie engines was on the firebox and throat sheets. The boiler lay in the center casting and was fastened the same as the smoke box is to the cylinder saddle of the ordinary engines. A plate 2" thick and 10" wide was bolted to the side of the center casting, ran to the boiler head and was bolted to the side sheet. Under this plate and just to clear the mud ring rivets was bolted another 2x10 plate that ran from the throat sheet back and formed the outside rib of the tender frame. The boiler in the cab was flat and had a cast iron plate 1½" thick. The crown sheet had no bars but radial staybolts that came through the cast iron plate with a nut on the top end. There were no fore and aft braces in the boiler and no braces in the dome. After the explosion these braces were put in the other five boilers. Another odd thing about these engines was the springs and equalizers. The equalizers were under the top rail of the frame. The pony truck equalizers connected with the long hanger of the front driving spring. They surely were nice riding engines but a broken spring hanger often blocked the main line for hours. No matter which hanger broke, all of the springs on that side would jump out of place and the back end of the pony truck equalizer would strike the track ties. Later there was a catch hanger placed at the back end of the pony truck equalizer. These engines were finally discarded and scrapped.

The Nos. 33, 34, 35 and 36 were 17x24" Manchester engines, 54" wheel centers, 3" tires, 140 lbs. steam pressure and were the last engines to have keyed side rods.

The Nos. 37 to 48 inclusive were also 17x24" Manchester engines. They had 2" smaller wheels than the other four, had solid end side rods and the driving box saddle was cast onto the box.

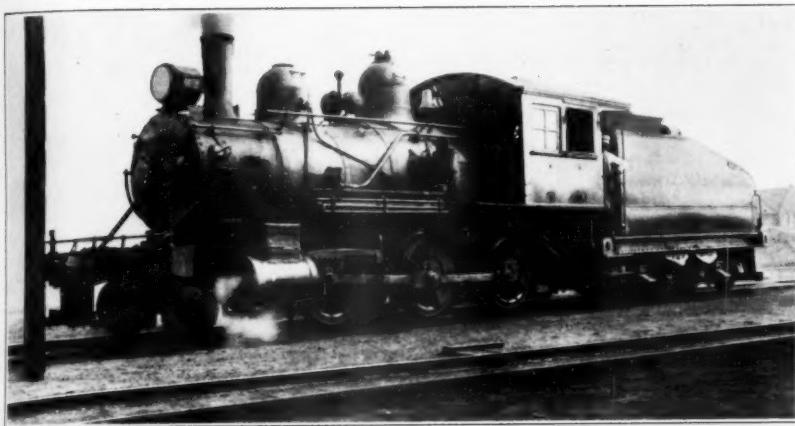
The No. 49 was a 16x24" four driver switch engine with 42" wheel centers, 3" tires and was the quickest steam engine I ever saw.

The next engines, Nos. 53 to 58 were the Cooke engines. The No. 53 was equipped with the air brake, the first 17x24" engine. These engines were bought for less money than the Manchesters and were intended to haul the same train. They were the last engines bought under John Player, Master Mechanic, in 1883 and doubled the road many a time.

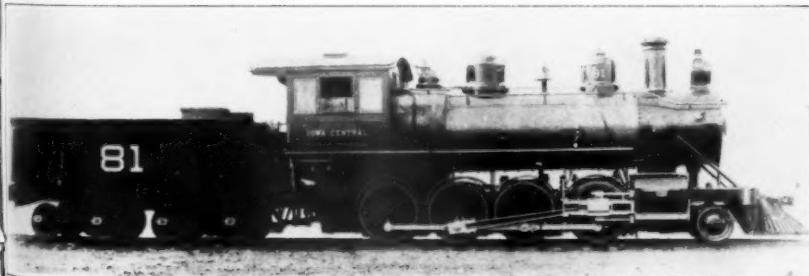
In the summer of 1890, M. C. Wheeler, Master Mechanic, bought the four Baldwins, Nos. 27 to 30 and the four small Pittsburgh ten wheelers, Nos. 31, 32, 50 and 52.

The No. 51 was a 17x24" Rhode Island and came from the Peoria & Farmington R. R. The No. 2 on the same road was a double dome Rogers engine, with 16x24" cylinders. It was third handed when the Iowa Central got her. The Iowa Central never rebuilt the engine but kept her running as long as possible and then scrapped the engine.

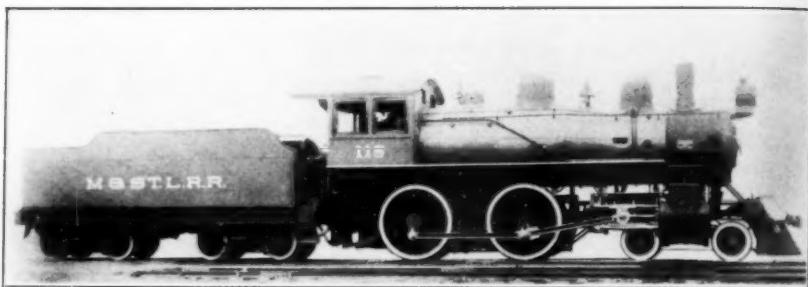
The Grinnell & Montezuma engine No. 1, C. R. I. & P. No. 13 was picked up with the G. & M. branch. The engine was a 12x22" Rogers engine, rebuilt at Marshalltown and made into a special engine. She



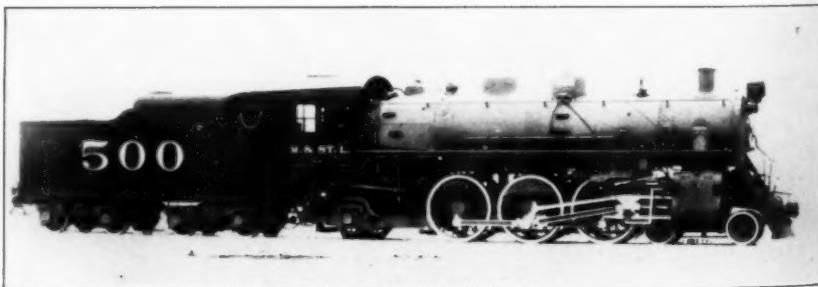
Minneapolis & St. Louis R. R. #62—Cooke, 1893



Ia. Central #81, now M. & St. L. #441—Baldwin, 1898



Minneapolis & St. Louis R. R. #115, now #156—Schenectady, 1906



Minneapolis & St. Louis R. R. #500—Brooks, 1921

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was of little account and scrapped. The Excelsior Coal Co. had her mate, the C. R. I. & P. No. 10.

Mr. Snyder left the Iowa Central R. R. in the fall of 1890 to go to the Northern Pacific R. R. Upon his return in 1894, the Nos. 62-65 Pittsburgh ten wheelers and 66-67, Cooke moguls had arrived.

Engines 59-61 were six wheel Cooke switching engines purchased in 1889 by M. C. Wheeler, Master Mechanic.

From 1900 to 1910 the following engines were received by the Iowa Central:

70 to 73	4-6-0	Cooke	1890.
74 to 79	4-6-0	Baldwin	1900. Vauclain Compound.
80 to 81	2-8-0	Baldwin	1898. Renumbered 90 and 91. No. 81 Vauclain Compound.
80 to 85	2-6-0	Schenectady	1902.
92 to 97	2-8-0	Schenectady	1902.
100 to 109	4-6-0	Pittsburgh	1897-1898.
200 to 205	2-6-0	Baldwin	1908.
225 to 236	2-8-0	Baldwin	1909.
420 to 429	2-8-0	Baldwin	1910.
7 and 8	0-6-0	Baldwin	1897.
9 and 10	2-6-0	Baldwin	1908.

In closing the brief account of this road the author wishes to acknowledge with thanks the many kindnesses and the courtesy given him by Mr. C. B. Rogers, Master Mechanic of the Minneapolis & St. Louis R. R. at Marshalltown, Iowa. It was through Mr. Rogers that the notes from Mr. F. W. Snyder were obtained as well as some notes from Mr. Moffat outlining the growth of the road. Additional data was acquired through Mr. A. W. Johnson, our Chicago Representative and another good member of this Society who does not care to have his name mentioned.

RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY'S NEGATIVES.

We have already listed in our previous bulletins negatives owned by this Society, prints from which are available to our members. We are glad to add the following:

Size 3 1/4x5 1/2

Neg. No.					
13	Baltimore & Ohio R. R.	\$5205	4-6-2	P-5	Baldwin
14	B. & O. Chicago Term.	\$794	0-8-0		Reb B & O
15	"	\$903	2-6-0	K-16	"
16	Chesapeake & Ohio	\$443	4-6-2	F-15	Richmond
17	Illinois Central	\$93	0-6-0		Rogers
18	"	\$4948	4-4-0		Cooke
19	Louisville & Nashville	\$323	4-6-0	G-13	Baldwin
20	"	\$991	2-8-0	H-23a	"
21	"	\$158	4-6-2	K-2a	L & N R R
22	"	\$217	4-6-2	K-4	"
					1919
					1911
					1907
					1904
					1893
					1903
					1903
					1914

23	M. St. P. & S. Ste. M.	#2719	4-6-2	H-23	A. L. Co.	1923
24	Missouri Pacific	#5507	4-4-2		Brooks	1909
25	Nashville C. & St. Louis	# 509	4-6-2		Baldwin	1915
26	Southern (N O & N E)	#6825	0-6-0		Richmond	1904
27	Pere Marquette	# 718	4-6-2		Brooks	1921
28	"	# 704	4-6-2		Schenectady	1911
29	Wabash "	#2256	2-8-2	K-3	"	1923
30	"	#2420	2-8-2	K-1	Baldwin	1912

Prints of the above will be furnished our members at 10c per print. 15c to non-members. Orders should be addressed to Mr. J. W. Merrill, 40 Broad St., Boston, Mass.

In this connection, it may be of interest to our members to learn that the famous Civil War (Brady) negatives, owned by the War Department, contain many subjects that would be of interest to our members. One of our members has checked these negatives and suggests the following as being of interest:

Neg. No.

- B-61 City Point, Va. Warehouse—Engine with loaded flat cars in yard.
- B-83 Burkesville Jct., Va.—1864. R. R. Station, passengers and train in foreground.
- B-185 Orange & Alexandria R. R. "Firefly" with U. S. Mail car on bridge built by soldiers. (Norris)
- B-186 Orange & Alexandria R. R. near Union Mills, Va. Two trains of box and flat cars on steep grade.
- B-302 Whitehouse Landing, Pamunkey River, Va. Reconstructed bridge, engines and trains.
- B-360 Hanover Jct. R. R. Station with passengers on platform.
- B-462 City Point, Va. U. S. M. R. R. "Gen. Dix" (Baldwin, 1862) and "Gen. McClellan" (N. J. L. W.)
- B-505 After the Second Battle of Bull Run. Picking up debris after Pope's retreat. Overturned engine "Commodore" (N. J. L. W.) and train.
- B-666 City Point, Va. U. S. M. R. R. #133 (Danforth, Cooke & Co.)
- B-1944 Catlett's Station, Va. Ruins showing engine on O & A R. R.
- B-1997 U. S. M. R. R. #116 (Rogers).
- B-1998 U. S. M. R. R. #162 (Baldwin) at Alexandria, Va.
- B-1999 U. S. M. R. R. #156 (Baldwin).
- B-2005 U. S. M. R. R. #137 (Danforth, Cooke & Co.).
- B-3426 City Point, Va. Engine house with engine.
- B-4748 Ruins of Georgia R. R. Roundhouse at Atlanta, 1864. Engine "O. A. Bull" on the table.
- B-4860 City Point, Va. U. S. M. R. R. "President" in foreground.
- B-4877 U. S. M. R. R. "Gen'l Haupt" (Mason).
- B-5046 Alexandria, Va. Engine coming out of roundhouse.
- B-5149 U. S. M. R. R. "Gen'l. Haupt" (Mason).
- B-5190 U. S. M. R. R. "Fred Leach" (N. J. L. W.)
- B-6328 Engine "Hero" destroyed by Confederates when evacuating Atlanta.
- BA-1169 Nashville & Chattanooga R. R. Depot at Nashville, Tenn., showing repair shops and thirteen engines in the yard.
- BA-1740 Loudon & Hampshire R. R. work train clearing up debris.
- BA-1729 Track near Potomac River at Alexandria, Va. Engine and flat cars.
- BA-1724 U. S. M. R. R. "Gen'l Haupt" and box car on trestle across Potomac Creek on Aquia Creek & Fredericksburg R. R.

The above prints are well worthwhile. They can be obtained 6½ x 8½ in size, glossy, for 15c per print. You should remit by Postal Money Order made payable to The Army Pictorial Service, Signal Corps, War Department, Washington, D. C. Stamps or checks will not be accepted. Remit by Money Order only. Prints will not be sent on approval or exchanged. Order by negative number.

Some Notes on The Chicago & North-western Ry.

By H. E. NICHOLS.

 THE Madison & Beloit Railroad Company, the earliest of the roads forming the C. & N. W., was chartered in 1848 to build from Beloit to Madison, Wisconsin. In 1850 this company was authorized by the legislature to extend its proposed line to the Wisconsin River and LaCrosse and to a point on the Mississippi River near St. Paul, as well as from Janesville to Fond du Lac, and the name of the company was changed to the Rock River Valley Union Railroad Company.

The Illinois & Wisconsin Railroad Company was chartered in 1851 by the State of Illinois to consolidate with any road in Wisconsin, and by an act of the Wisconsin legislature in 1855 it was consolidated with the Rock Valley Union R. R. Company and the new organization took the name of the Chicago, St. Paul & Fond du Lac Railroad Company. Prior to the consolidation the Rock Valley Union had commenced construction and had built about 30 miles from Fond du Lac south.

The Beloit & Madison Railroad Company obtained a charter in 1852 to build from Beloit to Madison via Janesville. The line was not completed till 1864.

The Galena & Chicago Union Railroad Company, which had built from Belvidere to Beloit prior to 1854, in that year leased the Beloit & Madison.

In March, 1857, the Chicago, St. Paul & Fond du Lac R. R. consolidated with the Wisconsin Superior R. R. Co. of Wisconsin, the Marquette State Line R. R. Co. of Michigan and the Ontonagon & State Line R. R. Co. of Michigan. The panic of 1857 did not spare the now enlarged Chicago, St. Paul & Fond du Lac R. R. and in 1858, with a heavy floating debt and 56 miles between Chicago and Minnesota Jet. still uncompleted, the property became seriously embarrassed. A receivership was avoided whereby all creditors made mutual concessions and at the same time contributed working funds for the new company—the Chicago & North-Western Railway. This company completed the line from Chicago to Fort Howard in 1864 and in the same year consolidations were effected with the Galena & Chicago Union and the Dixon, Rockford & State Line Railroad Companies.

The Green Bay, Milwaukee & Chicago Railroad Company was chartered in 1851 to build from Milwaukee to the state line and connect with the Chicago & Milwaukee R. R. Both lines were completed in 1855 and in 1863 were consolidated under the name of the Chicago & Milwaukee Railroad Company. To prevent it falling into the hands of the Chicago, Milwaukee & St. Paul the Chicago & Northwestern perpetually leased the Chicago & Milwaukee on May 2, 1866.

The Kenosha & Beloit Railroad Company was incorporated in 1853 to build from Kenosha to Beloit. The name was afterward changed to the Kenosha, Rockford & Rock Island Railroad Company when the route was changed to run through Rockford instead of Beloit. Failing to pay interest, the mortgage was foreclosed and the road sold to the Chicago & Northwestern in 1863. Construction between Kenosha and Genoa had been completed in 1862.

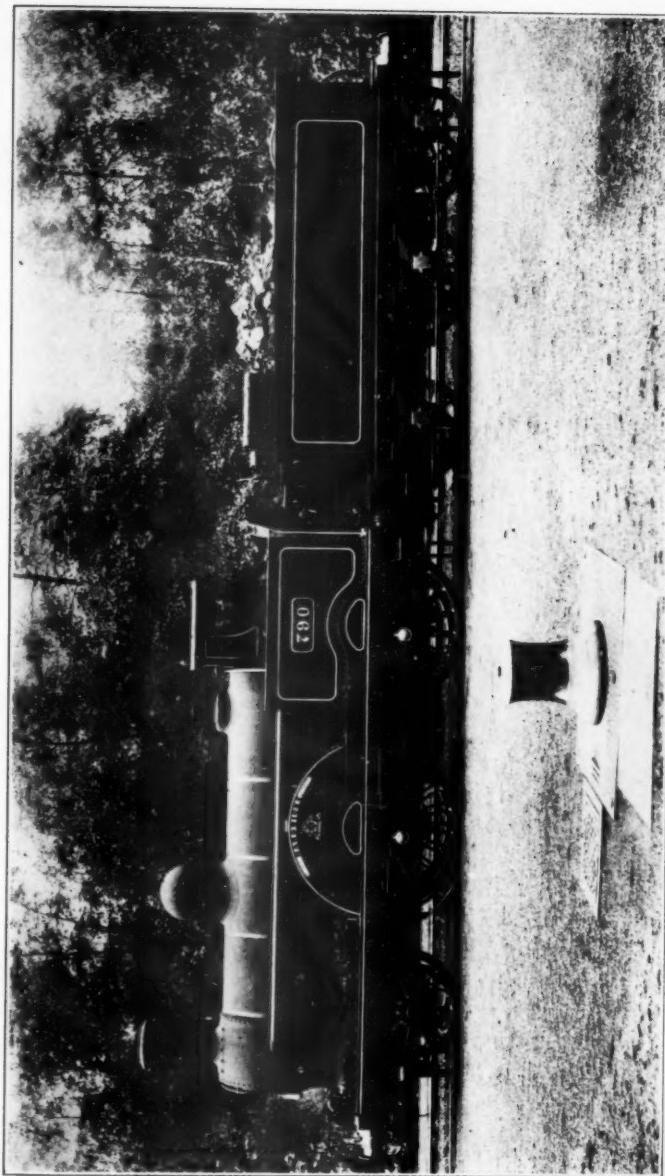
The Northwestern Union Railway Company, organized in 1872 to build from Milwaukee to Fond du Lac, was constructed in 1872 and 1873 and subsequently acquired by the C. & N. W.

The Baraboo Air Line Railroad Company, incorporated in the interest of the C. & N. W. in 1870 was consolidated with the C. & N. W.

In 1867 the C. & N. W. bought interest in the Winona & St. Peters Railway, which had built 105 miles of line, also interest in the LaCrosse, Trempealeau & Prescott, a line of 29 miles completed in 1870.

In 1856 Congress made a valuable grant of land to the state of Wisconsin for railroad purposes, which was claimed by the Chicago, St. Paul & Fond du Lac, but the legislature conferred it on the Wisconsin & Superior Railroad Company, which in 1857 by its consolidation with the Chicago, St. Paul & Fond du Lac became part of the C. & N. W.

Rewritten from a History of LaCrosse County, Wisconsin, 1881.



Courtesy L. M. & S. Ry.

London & North-Western Ry. "Hardwicke"



L. M. S. 4-2-2 No. 14010 (former Caledonian Railway No. 125) at Perth, 1931

Preserving Historic British Locomotives

By D. S. BARRIE

(*British Representative*)



NOTABLE event of the year 1932 in Great Britain, so far as the railway and locomotive antiquarian is concerned, has been the welcome decision of the London Midland and Scottish

Railway to preserve for their historic and sentimental value two obsolete passenger express locomotives which otherwise would have been broken up on their withdrawal from service.

The locomotives in question are 2-4-0 No. 5031 "Hardwicke", of the former London & North Western Railway's "Precedent" class, and 4-2-2 No. 14010 (originally No. 123 of the former Caledonian Railway.)

Both locomotives are of outstanding historic importance and the news of their impending preservation will arouse considerable appreciation among lovers and students of the steam locomotive.

While it is pointed out that the problem of preserving examples of notable locomotives for exhibition purposes is not a simple one, the L. M. S. Railway hopes to retain certain of them and put them on view at places where they have historical associations.

The "Precedent" class 2-4-0 locomotive "Hardwicke" (L. M. S. No. 5031) was designed by the late Mr. F. W. Webb with others of this famous type for working express passenger trains over the West Coast route between Euston and Carlisle, and was constructed at the London & North Western Railway's works at Crewe in 1892. "Hardwicke" differed from the original engines of the "Precedent" series in that the boiler pressure was raised to 150 lbs. per sq. in., while the driving wheels were increased in diameter from 6' 7½" to 6' 9".

The most notable performance achieved by this locomotive was recorded during the "Race to Aberdeen" in 1895, when "Hardwicke" drew a West Coast express from Crewe to Carlisle, 141 miles, in 126 minutes, at an average speed of 67.2 m.p.h. over a route which includes the 4½ miles ascent of Shap at 1 in 75.

The total mileage run by "Hardwicke" up to the time of her withdrawal from service on January 30, 1932, was 1,326,470 miles.

The other historic L M S locomotive which it is proposed to preserve is 4-2-2 No. 14010, which is still in service on passenger trains between Perth and Dundee and which has run over 40,000 miles during the past two years.

This engine, which is better known perhaps as Number 123 of the former Caledonian Railway, has the distinction of being the only single-driving wheel locomotive remaining in regular passenger service in Great Britain. She was built by Neilson & Company of Glasgow in 1886 for the Edinburgh Exhibition, but was acquired by the Caledonian Railway and certain details such as cab and boiler fittings were embodied in accordance with the Caledonian Company's practice to the

design of the late Mr. D. Drummond. At this time air sanding had just been invented, and Number 123 was equipped with this gear.

During the "Race to Edinburgh" in 1888 Number 123 accomplished several notable performances with West Coast expresses over the difficult stretch of steeply-graded railway between Carlisle and Edinburgh which includes the ascent of Beattock Bank. Her best recorded feat, with a four-coach train, was to cover the 100 $\frac{3}{4}$ miles in 102½ minutes at an average speed of approximately 59 miles per hour.

TWO NOTABLE CENTENARIES.

The year has also witnessed two notable railway centenaries of considerable historic importance, but considerations of space compel only the briefest reference to these. July 17th was the 100th anniversary of the opening of the Leicester & Swannington Railway, the first public railway in the Midland Counties of England. It was on this road on May 4th, 1833, that a collision occurred at a level crossing between a horse-and-cart and a train drawn by the locomotive "Samson", as a result of which a "steam trumpet" was designed for use on the locomotive to give warning of approach—the birth of the engine whistle whose blast may now be heard in almost every corner of the globe. It is of interest to note that the early engines of the Leicester & Swannington Railway—"Comet", "Phoenix", "Samson" and "Atlas", have given their names to four locomotives of the L. M. S. Railway's 6100 express class. The latter bear under their name-plates engravings depicting their primitive ancestors.

On September 3rd, 1932, occurred the centenary of the opening of the Wigan Branch Railway, designed as an offshoot of the Liverpool & Manchester Railway (1830) from Parkside, Lancashire, to Wigan. The Wigan Branch Railway, although purely local in origin, is of historic interest mainly because it was the first completed section of what afterwards became the West Coast route of the L. M. S. Railway between the capitals of England and Scotland.

In Memory of
FREDERICK L. EMERY
50 Congress Street
Boston, Massachusetts
who died on February 16th, 1933.



